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FIREMEN

FIFTY-EIGHTH YEAR • NATIONAL FIRE PROTECTION ASSOCIATION

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State and Provincial Firemen's Training

(See page 12-15)

FIGHT FIRES *faster*

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LIGHT WEIGHT
DROP FORGED
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the perfect mate
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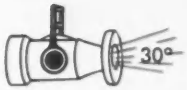
Effective long-distance Fog. Saturating indirect waterfog application



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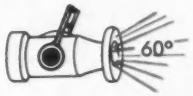

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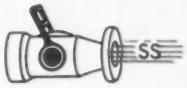

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- SELECTS ANY STREAM WITHOUT TWISTING

AUTO-STREAM® fog nozzle

★ **AUTOMATIC** — Finger-tip control gives you instant stream selection. Delivers the right stream — day or night — without twisting or turning in less than a second.

★ **POSITIVE POSITIONING** — Stream selected STAYS PUT. Drop it, hit it, beat it . . . Auto-Stream nozzle can't pull out of position until YOU move it.

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Would you guess that a Fire Alarm System might cost $2.00 a person per year? Or would you say $5.00 a box per person?

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"Last year's fire loss amounted to over $896,000,000. — most of it needless waste."

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Reduces Human Error

HANNAY HOSE REELS ... UP FRONT

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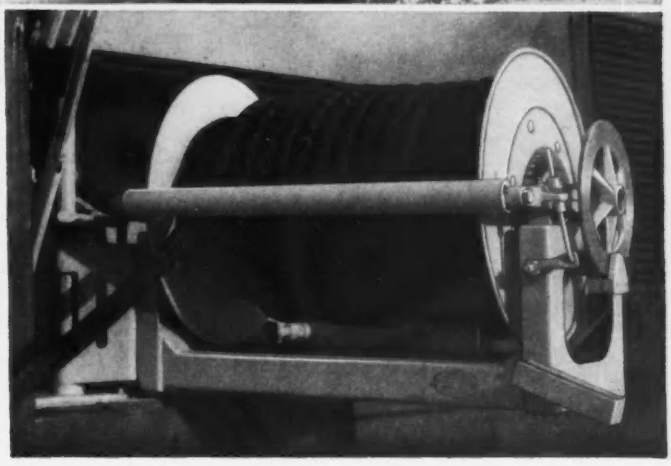

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- EXPLOSION - PROOF

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★ Sealed push button control; no gears to shift; no clutch to engage

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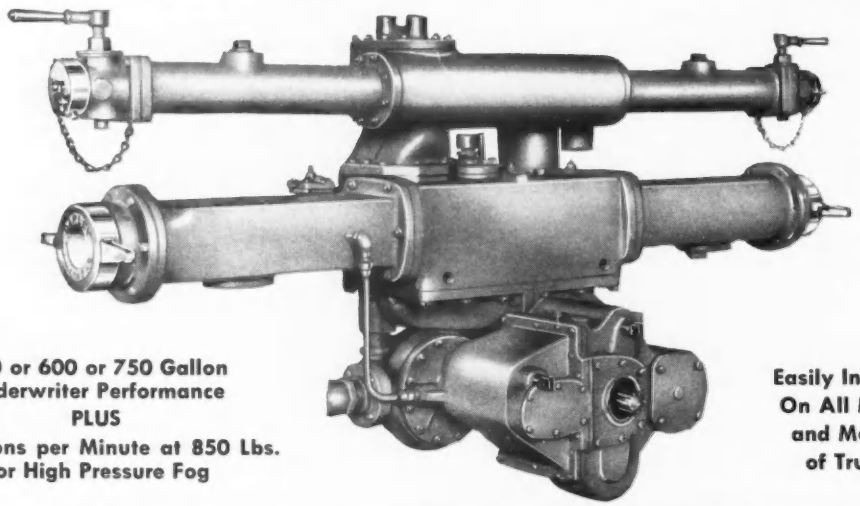

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Easily Installed On All Makes and Models of Trucks

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POWERED BY 140-HORSEPOWER ENGINE
OUTPUT FROM THIRD STAGE

Volume	*Pressure*	*Engine Speed*
190 G.P.M.	500 Pounds	2240 R.P.M.
157 G.P.M.	600 Pounds	2350 R.P.M.
125 G.P.M.	700 Pounds	2530 R.P.M.
92 G.P.M.	800 Pounds	2700 R.P.M.
77 G.P.M.	850 Pounds	2780 R.P.M.
61 G.P.M.	900 Pounds	2870 R.P.M.

OUTPUT WITH FIRST AND SECOND STAGES IN PARALLEL AND OPERATING SIMULTANEOUSLY WITH THE THIRD STAGE

Volume	*Pressure*	*Engine Speed*
65 G.P.M. (from third stage)	500 Pounds	2370 R.P.M.
500 G.P.M. (from first and second stages)	120 Pounds	2370 R.P.M.

OUTPUT WITH FIRST AND SECOND STAGES IN SERIES AND OPERATING SIMULTANEOUSLY WITH THE THIRD STAGE

Volume	*Pressure*	*Engine Speed*
60 G.P.M. (from third stage)	600 Pounds	2260 R.P.M.
250 G.P.M. (from first and second stages)	220 Pounds	2260 R.P.M.

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Firemen

Volume 20 — Number 11

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PAUL R. LYONS — ASSOCIATE EDITOR
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Published monthly for the fire service members of the
NATIONAL FIRE PROTECTION ASSOCIATION

A VOLUNTARY NON-PROFIT ORGANIZATION
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Cover Picture

This month's cover illustrates the type of training which Maryland fire fighters may obtain at the Maryland Fire School, University of Maryland, College Park. Robert C. Byrus (center, facing audience), Director of Fire Service Extension and a member of the NFPA Committee on Firemen's Training, reports that this year greatest interest was shown in a new course in two-way radio communications for fire fighters throughout the state. For other details see the report on State and Provincial Firemen's Training, contained on pages 12–15 of this issue. (Cover picture by Hanback Photographers, College Park, Maryland.)

Volume is Pressure

Recently, we read a report on a demonstration of forest fire fighting equipment including portable pumps. The observation was made that few of the demonstrators dared to talk about the amount of water discharged by their pumps but featured the high pressures they were able to show on their gages. Close scrutiny, however, revealed that a number of these pumps were moving very little water as the nozzles being supplied in some instances were only ¼-in. or 3/16-in. diameter. Such demonstrations, in effect, are similar to the old trick of building up a static pressure in an almost closed vessel. While there may be situations in forestry service where a very small flow at high pressure is useful, the true test for any pump is its ability to deliver a certain volume of water at a stated pump discharge pressure while taking suction at approximately a 10-ft. lift. NFPA standards for portable pumps for fire service use state a required flow at both 60 and 90 lbs. pressure. In general, such pumps will deliver twice the required quantity at very low pressures such as 30 lbs. and may give smaller quantities at higher pressures.

Pressure without adequate volume has for years been one of the plagues of effective fire service. It is the old story of the 4-in. water main which shows a static pressure of 80 or 100 lbs. but with insufficient volume to supply one good 2½-in. hose stream. A good fire pump must have the horsepower and capacity to give both the required pressure and volume. It is the volume of water that cools and extinguishes the fire. Pressure is only the means of getting it to the right spot in a serviceable fire stream.

Rekindles

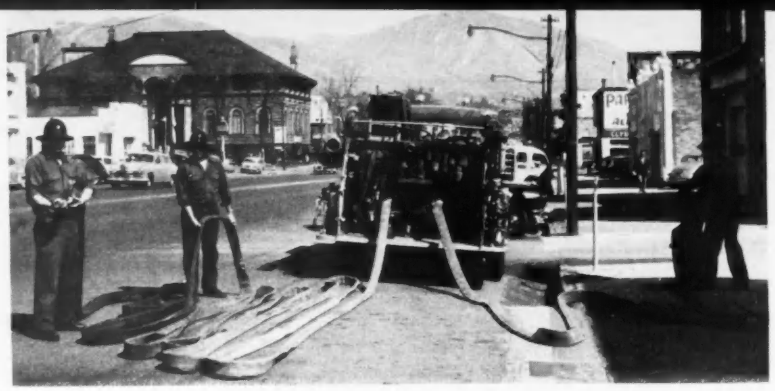
From time to time, we receive inquiries on the subject of "rekindles," or fires which break out a second time after apparatus has returned to quarters. The NFPA booklet, "Fire Department Terminology" has the following to say on the subject:

"Rekindle: An instance where fire department is called back to a location where fire has been extinguished because of re-ignition due to latent heat, sparks or embers, or due to presence of smoke or steam. As a rekindle is considered somewhat of a professional disgrace due to inadequate opening up or overhauling, such occurrences are usually recorded as a new fire but as a practical matter re-ignition 7 or 8 hours after a severe fire is not unusual and is one reason why watch lines and details should be maintained for a considerable time after a major fire."

Experienced fire fighters know that rekindles are likely after serious working fires and accordingly a watch line or detail is usually left on the premises after the apparatus returns to quarters. Smaller fire departments which have had less actual fire experience may not realize that even after a fire appears to be out that some unseen smoldering material may break into flame or heating action may occur in fuels which have been carbonized.

A very good practice followed in many departments is for the fire officer in the district where such a fire has occurred to return to the premises after a few hours and carefully look over the property. Such a procedure has several advantages. One is that the property owner will usually be more composed and may be able to give more coherent information as to the origin and circumstances of the fire. The officer will be able to review the evidences of fire travel and extinguishing methods used that will be helpful in fighting future fires and can look for any evidence of heating which may result in a serious second outbreak. If heating is detected appropriate action can be taken before serious damage is done.

Excellence and Efficiency Keynoted at



Engine 1 making a practice layout with 150 ft. of 2½-in. line carried pre-connected to rear outlet of pumper along with two 1½-in. lines each carried in individual compartments. A 3-in. supply line to the rear gated inlet will supply these three preconnected lines. A large booster tank with a 3-in. connection to the pump permits the operator to charge the lines without waiting for the hydrant supply. A water level gage indicates the tank supply.

Salt Lake City

By Warren Y. Kimball

THE Fire Department of Salt Lake City, under Chief J. K. Piercey, is one that seeks to make up with excellence and efficiency what it admittedly lacks in size. Each of the 220 members of the department is considered an active fire fighter whether assigned to fire prevention, maintenance, training, or fire combat divisions. Likewise, each fire fighter appreciates that fire prevention is a first phase of fire control.

Salt Lake City, the historic capital of Utah, is located in the valley of the Great Salt Lake at about 4300 ft. above sea level. The Wasatch mountains, only a 5-minute ride from the heart of the city, tower to elevations of over 9000 ft. Among the historical shrines protected by the department are the Temple and the great Tabernacle of the Church of the Latter Day Saints ("Mormons").

The fire department operates from 11 stations (including an airport fire company) to protect nearly 200,000 residents in a territory of over 53 square miles. With an average protection area of 5 square miles for each fire station, first alarm runs of 3 miles are not unusual. An alarm from Temple Square in the heart of the city involves runs up to 2½ miles to provide a first alarm response of 4 engine and 2 truck companies. The department's last annual report urges the establishment of additional engine and ladder companies and a new station in the high-value district. Meanwhile, the provision of auxiliary or booster trucks at 5 stations to relieve heavy apparatus of trivial incidents has done much to help the department husband its limited fire fighting force.

(Left) Each fire station has a large map of its "fire combat district" made by the firemen. This one was done by Fireman Ralph Carlston.

One problem which the department shares with other communities is the tendency of the city to annex outlying semi-rural areas, thus increasing the territory which must be protected with the danger that fire fighting units may be drawn away from high-value districts during seasons when outdoor fires are frequent.

THE fire department is one of the municipal units reporting to Public Safety Commissioner Ben E. Lingenfelter. Off hand, it would be difficult to find a Salt Lake City fireman who did not believe that the department has the best commissioner in the United States and much of the improvement in the department can be credited to the support and interest of Commissioner Lingenfelter.

The department has in active service or in reserve some 27 pieces of motor fire apparatus. In active service are four 1000 gpm pumpers, six 750 gpm pumpers, one 500 gpm pumper, 100-ft., 85-ft., and 65-ft. aerial ladders, two crash trucks, and five booster trucks. All active apparatus and 14 officers' cars and shop vehicles are radio equipped. Each chief officer is assigned a car full time and has it available if called back for special or emergency duty.

Since many fine homes are located on the steep slopes of the Wasatch foothills overlooking the city, good road capability of fire apparatus is a problem especially in winter. Recent specifications for a 1000 gpm pumper called for a minimum 250 h.p. engine and specified the following road test:

(*a*) Maintain a continuous speed of 60 mph on level roads.
(*b*) Maintain a continuous speed of 40 mph on 3% grade.
(*c*) Maintain a continuous speed of 30 mph on 5% grade.
(*d*) Maintain a continuous speed of 20 mph on 10% grade.
(*e*) Accelerate from a standing start to 35 mph in 500 ft.
(*f*) From standing start attain 15 mph on any grade up to 8% in 500 ft.
(*g*) Go up 20% grade, forward or in reverse.
(*h*) Make continuous run of 20 miles within an hour on roads of less than 10% grade without undue heating or loss of power. Maximum speed in test not to exceed 60 mph.
(*i*) Quickly accelerate on level road from 10 to 35 mph without shifting gears.

Engineer A. A. "Cy" Ross of the Board of Fire Underwriters of the Pacific who conducted the acceptance tests for the department observed that these tests "separated the men from the boys." In addition to

usual pumper tests, the specifications required the 1000 gpm pumper to deliver 1200 gpm at 150 lbs. in a spurt test. Several engine companies first due in mountain areas are equipped with 4-wheel drive.

Personnel

THE greatest resource of the Salt Lake City Fire Department is its trained manpower. It is a comparatively "young department" under experienced leadership. The last annual report indicates that 175 men had served 15 years or less but the 10 chief officers totalled 256 years of experience. Chief Piercey, approaching 35 years of service and in command for nearly 10 years, is No. 2 in seniority on the department's roll.

Four assistant chiefs: Al Thompson, "A" Combat Platoon; A. R. Ward, "B" Combat Platoon; D. E. White, Training; and W. J. Smith, Fire Marshal, constitute a Board of Officers who meet regularly to recommend departmental policy and procedures. Four battalion chiefs command the No. 2 fire district and relieve assistant chiefs on days off occasioned by the 63-hour-work week. Battalion Chief J. M. Fisher is in charge of maintenance.

All members are required to devote part of each day to some form of physical exercise and most of the fire stations are provided with exercise rooms. A favorite exercise is weight-lifting, which is directed by competent instructors. This exercising has reduced injuries to personnel in handling heavy fire equipment.

Another measure adopted to make fire station life more agreeable has been the provision of a company room where members can carry out hobbies or work of their own choosing. Use of the room is scheduled by a station committee so that all men get equal chance to use the facilities regardless of rank. The department has also made paint and building materials available to each company and due to the ingenuity and industry of the fire fighters, it would be hard to find a department with quarters more attractive or livable regardless of age.

Training

PROBABLY no department of this size has a more complete training program than that headed by Assistant Chief D. E. White who is assisted by Captain William Kresser, departmental instructor and Lieutenant A. L. Thorstrom, equipment instructor. Every member has at least 90 minutes of drill or schooling a day. In addition to the full-time instructors, all officers and all men eligible for promotion have had instructor training. Company officers frequently assign different men to instruct in various subjects. During 1953, 44 officers attended classes held by the Salt Lake Area Vocational School on their own time.

Unfortunately, the old drill tower became unsafe and had to be torn down so for the present the department is using facilities at the fair ground and at other locations to supplement company drills. Last year the training schedule included pumper operation and maintenance, aerial ladder operations, special training in advancing lines to upper floors, and numerous other subjects including civil fire defense for which the department has well developed plans.

In June the 9th Annual Training School was held for three days under the auspices of the Salt Lake City Fire Department. The school last year was attended by more than 300 firemen from 36 city, county, industrial and military fire departments.

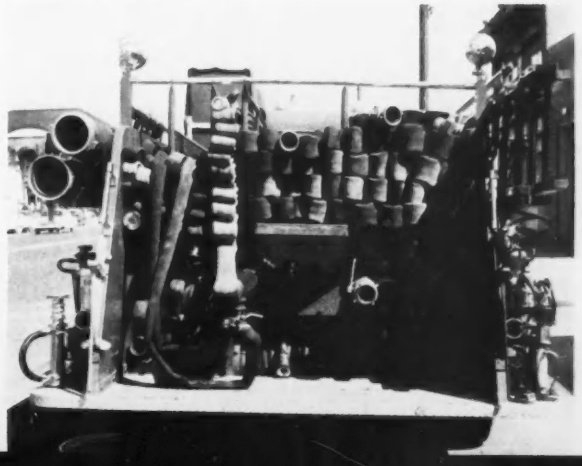
Here a pumper at the training grounds supplied by two 3-in. hydrant lines discharges through a monitor. One supply line is connected to a rear inlet and one at the side. All Salt Lake pumpers have a compartment loaded with 3-in. hose which frequently is used for a pumper supply.

The department also operates its own multi-lith machine and has developed three excellent training manuals. One manual worthy of special note is a "Orientation Manual" issued to all new members. This includes fire service history and traditions as well as departmental procedures and basic training to provide each member with background information designed to inspire pride in the fire service. In 1951, on the occasion of the 100th Anniversary of the department, Chief Piercey issued a history of the department. (A hand pumper, "The Volunteer," built in 1853 and reported to be the first west of the Mississippi, is preserved in Veteran Volunteer Firemen's Hall.) In 1879 the city council concluded that it would be cheaper to have a full-paid department than to grant the volunteers a requested increase of from 25 to 50 cents an hour.)

A special feature of the training program is the equipment instruction under Lieutenant Thorstrom. This combines a monthly inspection of all apparatus and equipment in quarters with instruction of members in its use. The program has not only served to improve the efficiency of the companies in the use of equipment but has vastly improved preventive maintenance by on-the-spot correction of minor defects and by spotting needed repairs before major trouble develops.

(*To be concluded in December, 1953, issue of* FIREMEN *magazine.* — Ed.)

(Below) Rear view of Engine I. Right: 3-in. supply line with hydrant gate and 3-in. gated inlet below. Left: two 1½-in. and one 2½-in. preconnected lines in individual compartments. Center: Additional 2½-in. hose. Note the hose clamps on either side of the rear step. The department also has on call two hose trucks one of which is loaded with 3-in. hose. Incidentally, hose is bought under rigid specifications requiring the bidder to certify that it is the best grade made by the manufacturer he represents.



MAKING A GOOD JOB OF IT

BY WARREN Y. KIMBALL

Hose Size and Water Flow

THE average fire department pumping engine does not carry sufficient fire hose to fully utilize its pumping capacity unless the lines are very short. Pumping capacities have been increased over the years in a number of fire departments and many nozzles in use require larger flows than were considered standard by many departments in years past. Yet the water carrying capacity of fire hose in general use has not been significantly increased.

Take for an example, a 750 or 1000 gpm pumper carrying 1200 ft. of 2½-in. hose. This would permit the pumper to supply three 400 ft. lines (about 750 gpm) or two 600 ft. lines (about 500 gpm) but these pumpers, especially when working from a good hydrant, might well be expected to pump through considerably more hose when working at capacity. The National Board of Fire Underwriters' grading schedule calls for a separate hose tender or second pumper carrying hose for half of the pumpers in high-value districts, but this does not help where pumpers must pump through long lines outside of high-value districts. Some departments carry larger than standard hose loads but this increases the weight and amount of hose that must be handled as well as the inventory and hose budget.

A MORE satisfactory solution of the problem of moving water to get the maximum performance of pumpers and nozzles would seem to be an increase in the internal diameter of each standard size of fire hose. For the sake of uniformity and convenience, standard sizes of fire hose coupling threads should be retained but the tail-pieces and rings could be designed to permit use of hose having internal diameters approximately ¼ inch larger than the nominal diameters. Even this slight increase would permit 40 to 50 per cent greater flows with a given friction loss. If hose having 1½-in. couplings was constructed with 1¾-in. internal diameter, this hose would carry 80 gpm at about the same friction loss as 1½-in. hose flowing only 50 gpm and 100 gpm fog nozzles and ¾-in. solid stream could be efficiently supplied with 1½-in. couplings. This should not be a difficult design problem because the standard 1½-in. male coupling has 2-in. outside diameter.

With the internal diameter of 2½-in. hose increased from 2 9/16 to 2¾, hose with 2½-in. couplings should carry 250 gpm with about 9 lbs. friction loss and 400 gpm at about 22 lbs. friction loss. These two 2¾-in. lines would carry the capacity of a 750 gpm pumper without high friction loss. A few fire departments in the San Francisco Bay area already use 2¾-in. hose with either 2½-in. or 3-in. couplings. The 3 1/16 outside diameter of the 2½-in. male coupling should permit use of 2¾-in. hose without much difficulty.

Likewise, the carrying capacity of 3-in. hose could be improved by a 3¼-in. internal diameter so that it would carry 500 gpm with only 15 lbs. friction loss per 100 ft. This would permit two 3-in. lines to utilize the rated capacity of a 1000 gpm pumper and would permit one such line to supply a 500 gpm fog nozzle.

AS A matter of interest, we publish a table of friction loss of cotton rubber lined hose with 1¾-in., 2¾-in. and 3¼-in. internal diameters. Friction loss will vary with individual samples of hose, depending upon construction and interior smoothness, but substantially increased flows are obtained by increasing the size of the waterway so that excessive pressure will not be required to move the desired flows.

Improved Fire Hose Having Friction Characteristics Equivalent To a ¼-in. Increase in Nominal Diameter Should Give the Following Results:

GPM	1½-in. Nominal Size FL on 1¾-in. Basis	2½-in. Nominal Size FL on 2¾-in. Basis	3-in. Nominal Size FL on 3¼-in. Basis
50	4.5	—	—
80	10.6	—	—
100	16.0	1.7	0.8
120	22.4	2.4	1.1
150	40.0	3.6	1.7
200	—	6.1	2.8
250	—	9.2	4.3
300	—	12.7	6.0
350	—	17.1	8.0
400	—	21.7	10.2
450	—	28.2	12.7
500	—	34.4	15.3
550	—	—	18.5
600	—	—	21.6
650	—	—	24.5
700	—	—	28.7
750	—	—	32.8

1¾-in. gives 50% FL of 1½-in.; 2¾-in. gives 60% FL of 2½-in.

Fire Chiefs' Drill School

Speakers and officials at the Ninth Annual Fire Chiefs' Drill School at Old Forge, New York, September 26–27. (*Left to Right*) W. L. "Army" Armstrong, Old Forge Fire Department and Director of School; John F. Conley, General Electric Company, Syracuse, New York; George C. Baist, Rochester, Secretary-Treasurer, New York State Association of Fire Districts; J. A. McCormick, General Electric Company, Syracuse; Chief Carl Smith, Saranac Lake Fire Department and Assistant Director of School; Warren Y. Kimball, Editor of FIREMEN and Manager, NFPA Fire Services Department; Allen Mullens, Rockwood Sprinkler Company, Worcester, Massachusetts; and Stephen F. Burdick, chief of plant protection, Brown-Lipe-Chapin Division, General Motors Corporation, Syracuse. (*Photo by William P. Weedmark.*)

Industrial Fire Protection

Consolidated Edison employees using fog on an oil pit fire. They also acquire experience in fighting fires in magnesium chips, electric motors, paint lockers, and oil, gas, and electrical installations.

Consolidated Edison Fire School

NEAR LaGuardia Airport, at its Astoria Plant, the Consolidated Edison Company of New York, Incorporated, conducts a fire school for its employees, for members of the U. S. Coast Guard, and for other interested visitors. The training site covers an area of approximately one acre and has a number of installations which afford diversified training in fire fighting procedures.

The fire school has been organized since 1947 to provide training for Company fire brigade members, foremen, supervisors, and other key personnel in fighting types of fire which might occur on the Company's property. More than 7,500 persons have participated in the classes since the school was begun. In 1953 total attendance was 1,504 in the May through September sessions, which consist of two 3-hour classes. One class is devoted to fire extinguisher instruction and the other covers the use of heavy duty fire apparatus. A total of 427 diplomas were awarded this year to men who completed the course. In addition approximately 200 members of the U. S. Coast Guard also received instruction.

The fire school operates as part of a safety program headed by W. F. Brown, Safety Director of Consolidated Edison. W. E. Rossnagel, Engineer of the Company's Safety Bureau, is drillmaster of the school.

Men who attend the classes have opportunity to participate in and observe a variety of fire extinguishing methods. There is a "smoke house" in which wood fires are started to be extinguished by the "indirect" method of water fog application. A number of fuel tanks and pits provide for training in the extinguishment of flammable liquid fires. Gas and electrical installations are also on the grounds to duplicate conditions on the Company's properties. Training in fighting motor vehicle fires and aircraft crash fires also is included in the course.

RECENT installations at the school include a system of piping with spray sprinkler heads to protect a 75 kva oil-cooled transformer, and a 12-in. steam pipe which is heated internally by a propane gas burner. (Oil is allowed to become ignited on this pipe and the fire then is extinguished by the students. This training problem duplicates a situation which occurred at Hell Gate Electric Generating Station a number of years ago.)

A vertical tank with 2000 gallons of burning transil oil is extinguished by air agitation. There is also a working model to demonstrate the hazard of electric shock if a fire fighter should step into a charged puddle of water between live apparatus and a ground.

Another electrical installation is an iron grating suspended from a wire which is energized to 27,000 volts. Fog (properly applied) is directed on the grating to demonstrate effectiveness of such water application on electrical equipment.

Training in handling transformer fires helps to develop confidence in the men most likely to encounter them.

Members of the U. S. Coast Guard participating in the class on rescue operations, which is included in the fire training.

A Company employee wields dry chemical extinguisher. These men will also use 1½- and 2½-in. lines, deluge sets and other equipment.

State and Provincial Firemen Training — 1953

IF A single word had to be chosen to describe the status of the fire service in the United States and Canada today, then perhaps "change" would be the most significant. For certainly this summary of state and provincial firemen's training programs will indicate to the reader that a healthy transition is occurring in many areas which can only result in continual betterment for the fire service.

Better equipment, different fire fighting methods, new training facilities and the exchange and investigation of new ideas are responsible for the increase in the number of men exposed to training in fire control subjects. (See tables.)

Yet another consideration is aiding the trend, as indicated by one state's report telling of recognition of the training program by fire insurance authorities. The report concluded with: "It should be noted that in the case of habitational structures there was a general reduction of approximately 10 percent. There was also a decrease in the cost to churches and schools, particularly to schools that provide fire hydrants and building inspection. In the case where a few points means a different classification for cities or districts, credit is given by the State Surveying and Rating Bureau according to the number of classes conducted by our instructors and the number of certificates (for training) earned by the fire department. In some cases this training has brought change of classification involving savings of thousands of dollars in insurance costs."

ANNUAL STATEWIDE FIRE SCHOOLS 1953

State	Firemen Attend.	No. Years Held
Alabama	179	17
Arkansas	107	—
California	823	4
Colorado	817	20
Connecticut	305	12
Delaware	62	5
Florida	145	24
Georgia	409	2
Idaho	180	4
Illinois	557	29
Indiana	276	20
Iowa	654	29
Kansas	308	—
Kentucky	726	30
Louisiana	145	22
Maryland	240	20
Michigan	479	25
Minnesota	206	25
Mississippi	98	2
Montana	46	13
Nebraska	176	16
New Hampshire	181	2
New Jersey	900	2
North Carolina	457	25
Ohio	110	8
Oklahoma	239	20
Oregon	25	1
Pennsylvania	1,006	14
South Dakota	508	24
Tennessee	326	10
Texas	843	24
Utah	412	9
Virginia	117	7
Washington	500	—
West Virginia	172	21
Wisconsin	145	—
1953 Total	12,879	
1952 Total	9,614	

THE scope and type of firemen's training varies, of course, in each state and province. Enthusiasm, however, appears to be inherent in the paid, call and volunteer fire fighters who participate in the various programs. This report summarizes only those activities which are conducted directly as part of state and provincial training programs. Thousands more firemen were trained by local instructors, county-wide fire schools, and state firemen's associations.

The developments and training high lights summarized in this report were selected from the reports of state and provincial firemen's training programs. The summary is not intended as an inference that one state is "better" than another because of its accomplishments. It is compiled to show that the fire service is a vital, progressive group, aware of its responsibilities to develop efficiency and methods to cope with our nation's expansion in population and habitational property.

Fire Schools

Of the states reporting on their training programs, 36 conducted an annual statewide fire school. As the table shows, 12,879 firemen participated in these schools which varied in duration from two days to five weeks. In every school, classes included lectures, demonstrations, and basic evolutions of practical fire fighting, with emphasis upon subjects that appeared most important to fire fighters in that state.

In many states, and in Canada, itinerant or travelling instructors visited many communities to bring their skills and information to fire fighters who for some reason could not attend an annual school.

In California such training was carried out by 8 travelling instructors under Thomas S. Ward, Special Supervisor of Fire Training in that state. In addition zone and departmental schools were also held under supervised instruction. The California Institute of Fire Training was held for the fourth year in 5 different communities for men who had a minimum of 5 years experience in a fire department or who had taken courses under traveling instructors. Subjects included: general fire fighting procedures, aircraft crash fire fighting, leadership and human relations, dangerous chemicals, sketching and drawing, classification of cities and fire districts, and a study of plastics and other synthetic materials. Among other states which utilized itinerant training were Georgia, Maryland, Nevada, Tennessee

TOTAL FIREMEN RECEIVING TRAINING
(State and Provincial Programs Only)

State		State	
Alabama	179	Nebraska	3,732
Arkansas	2,073	Nevada	941
California	6,150	New Hampshire	181
Colorado	4,956	New Jersey	900
Connecticut	1,064	New York	*
Delaware	643	North Carolina	457
Florida	1,239	North Dakota	381
Georgia	4,831	Ohio	3,775
Idaho	192	Oklahoma	1,549
Illinois	557*	Oregon	2,987
Indiana	4,834	Pennsylvania	7,437
Iowa	4,193	South Dakota	1,181
Kansas	1,591	Tennessee	842
Kentucky	726*	Texas	3,451
Louisiana	205	Utah	1,525
Maine	274	Virginia	573
Maryland	2,092	Washington	1,600
Massachusetts	570	West Virginia	548
Michigan	2,764	Wisconsin	224
Minnesota	1,793		
Mississippi	1,179	Total U. S.	75,640
Missouri	1,205	Ontario	2,195
Montana	46*	Br. Columbia	3,305
		Nova Scotia	1,631
		Saskatchewan	88
		Tot. Canada	7,219
		Gr. Total	*82,859

*Complete figures not available. New York State training will be reported in December FIREMEN.

Washington State fire fighters using water fog on a flammable liquids fire. At right is a steel plate 12 ft. high and 6 ft. wide. Gasoline is pumped at 30 pounds pressure through a perforated pipe on the edge of the plate. Two tanks and the plate are ignited and fire fighting crews are timed on extinguishment. Best method for extinguishing the plate fire has been to attack the plate with two fog nozzles while a straight stream is directed about one inch below where gas emanates from pipe. The flame is thus deflected while the plate is cooled. (*Official photo U. S. Navy*)

and Virginia, all of whom reported considerable success with this type of training.

In British Columbia, Ontario, and Saskatchewan, itinerant instruction is most important to the overall training picture. In these provinces instructors have special mobile units equipped with tools and appliances which trainees in the fire departments learn to operate under supervision of the instructor. Nova Scotia conducted 2 regional fire schools which had a total attendance of 1,631 firemen.

"Fog" Fire Fighting

A highlight of the 25th Fire Department Instructors Conference at Memphis, Tennessee, in February, was the testing of "indirect" application of water fog on three frame dwellings. (See April, 1953, FIREMEN.) The tests were conducted by a Committee on Indirect Water Fog Application, under Chairman Emmett Cox of the Western Actuarial Bureau.

These tests were the forerunner of many others which were conducted in fire schools throughout the country, which emphasized the trend of fire fighting and a better understanding of the efficient use of water. Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, and Oklahoma fire schools all conducted one or more tests on dwelling or factory structures to evaluate fog nozzles and extinguishing methods of fog application.

In most of these tests the building was specially prepared to confine the heat and thermocouples and other temperature recording devices were used. A report on such "testing" methods was contained in the article "Testing the Features of Fog" which appeared in the July, 1953, issue of FIREMEN. The Oklahoma State Fire School, under the direction of the Fire Protection Department of Oklahoma A & M College also published a complete report on its testing methods and results of fog application.

Civil Defense

Fire training for Civil Defense perhaps received greatest emphasis in the Provinces of Canada, although many states are conducting extensive programs on this subject. British Columbia, Ontario, and Saskatchewan each trained volunteers and auxiliary fire fighters for Civil Defense operations under the itinerant instruction program.

(Right) At the Maryland Fire School, Tacoma Park fire fighters demonstrate how to get maximum volume from a strong hydrant. Three 1½-in. nozzles and a 1¾-in. nozzle are supplied by two pumpers connected in tandem. A 1250 gpm pumper was connected to hydrant with a length of 6-in. hard suction hose. A 750 gpm pumper was connected to suction intake of first pumper with 4½-in. hard suction. Total delivery was 2595 gpm. *(Photo by Hanback Photographers.)*

Ontario conducted a 20-hour "Radiological Defense Orientation" course to acquaint fire fighters with the handling of radioactive materials. Tactical fire study forums of 4- to 6-day duration were also held in that province under the auspices of the Canadian Civil Defense Co-ordinator and the staff of Ontario Fire Marshal W. J. Scott. Fire marshals and fire commissioners of all the provinces attended, together with fire chiefs of the major cities and other officials.

In the United States Civil Defense training was conducted at fire schools in Colorado, Connecticut, Kansas, Massachusetts, and South Dakota, but many other states had Civil Defense operational exercises outside of the state training programs.

Colorado conducted a special class in home fire fighting and fire prevention for 20 women, who were group or organizational leaders representing 50,000 women. In Connecticut a "pilot" course was conducted for 18 Civil Defense leaders. This is expected to lead to a broader program during the next year.

Connecticut is also planning a 3-day training program for fire chiefs. This will cover Civil Defense Operations and is expected to attract a number of chiefs from all over New England. (See page 34.)

South Carolina inaugurated a Civil Defense Instruction Training Program with the City of Columbia and Richland County Defense Units coordinating with the Columbia Fire Department headed by Chief A. McC. Marsh.

Pumper Operation

Almost every fire school training program devoted considerable attention to the training of fire department pumper operators. Particular emphasis is placed on this instruction at the Maryland Fire School in College Park under the direction of Robert C. Byrus, and at the North Carolina Fire College and Pump School in Charlotte, headed by Charles L. Burkett. Both of these schools have pump models and other instructional aids and facilities.

A significant contribution to this particular type of training was the book "Operating Fire Department Pumpers," which was published by the NFPA early in 1953 in cloth bound and paper bound editions. This was compiled from material gathered by a sub-committee of the NFPA Committee on Firemen's Training, and a series of articles printed in FIREMEN.

Inspection and Fire Prevention

Greater stress on these subjects was apparent in a number of states' training programs and fire schools. Florida held a special 2-week course in fire prevention. Iowa held a short course for fire department inspectors, while Michigan held a special Fire Inspection Institute in conjunction with the Michigan State Police. Missouri, Nebraska, Nevada, New Jersey and Oregon also held courses which stressed pre-fire planning and inspections, in addition to emphasizing methods of conducting and reasons for effective fire prevention programs.

(Left) In one of the tests of fog application conducted in many of the nation's fire schools, Illinois fire fighters "move in" on this prepared structure. Note that displacement is starting to develop through the rear windows as the water fog converts to steam. Building sidings, windows, and other openings should be adequately covered to provide best results in "indirect" application of fog.

Arkansas fire fighters using fog on a gasoline and oil spill fire during a night training session.

During a regional fire school in Las Vegas, Nevada, a fire fighter "ties in" with a "classic" pose atop an aerial ladder. Another regional school was conducted in Reno.

Instructor Training

There is a noticeable increase in teacher-training throughout the fire schools of the nation, particularly in regards to the training of officers of paid fire departments. Arkansas conducted a state-wide conference for fire department instructors. Connecticut held special courses for 66 officers of the Bridgeport Fire Department. Florida held a 30-hour course, while Idaho had a special 5-week course on instructor training at Boise Junior College with the cooperation of the State Board for Vocational Education and the Boise Fire Department. Iowa also held an officers' training course for officers of the Davenport Fire Department and has had a number of requests from other paid departments for similar instruction.

Massachusetts continued its year-round program of training instructors and drillmasters and this year held 17 classes for such instruction. Missouri held instructor-training classes in Kansas City and St. Louis for 201 men of those departments. North Dakota, Oklahoma, Oregon, Pennsylvania, Tennessee, and Texas also devoted special classes to prepare officers and other fire department personnel in this important phase of firemen's training.

Special Officers Classes

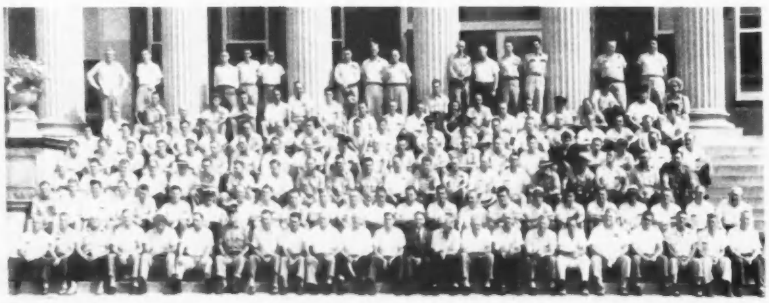
A course worthy of mention in this report is that conducted by the University of Southern California as part of a professional training program for firemen. It offers instruction, research and field study with credits which can be applied towards a degree in Public Administration.

Among its other courses the Florida Fire College also devoted 30 hours to training in Fire Department Administration. Connecticut, Oregon, Pennsylvania, South Dakota, and Virginia conducted special training classes for fire chiefs with stress upon administration and Civil Defense problems. Purdue University continued its Arson Investigators Institute for fire and police personnel. Similar courses on a lesser scale were conducted at Florida and New Jersey.

Industrial Fire Training

More and more fire schools are giving attention to the training of personnel of industrial fire brigades and to the study of fire problems peculiar to industries in the respective states. The majority of state fire schools report an increase in attendance of industrial personnel. Connecticut, New Jersey, Pennsylvania, Tennessee, Illinois, Indiana, Kansas, Maryland, and Texas were states which devoted considerable time to training in this subject. Texas, in particular, stressed training in fighting gas and oil well fires, and also held special classes on aircraft crash fire fighting. South Dakota stressed the handling of fires in liquefied petroleum gas installations and also had a course on aircraft crash fire fighting.

In Northern Indiana a fire school was held at the University of Notre Dame. Since the area is populated with industrial buildings the course was of particular interest to industrial personnel. Water fog tests were conducted on 5 buildings. A gasoline tanker fire was ignited to show safety features of proper tank construction and also the effectiveness of foam, water fog and dry chemical on other types of industrial fires.



New attendance records were set at the 10th Annual Tennessee Fire School held at Middle State College in Murfreesboro. This group picture shows some of the fire fighters who attended.

Volunteers practicing ladder evolutions during a fire school conducted at Topeka, Kansas. (*Photo by Kansas State Board for Vocational Education.*)

Other Training

There has been considerable increase in fire prevention training courses throughout the state fire schools. Florida, Iowa, Missouri, Nebraska and Pennsylvania in particular have given special instruction in this subject both to fire fighters and to representatives of the general public.

Rescue training also has shown an increase on some school programs. California conducted a demonstration of life saving operations for the California Rural Fire Association at the drill grounds of the Fresno Fire Department. The demonstration was witnessed by 5,000 persons. The Minnesota Fire School stressed the treatment of burns and methods of resuscitation in its rescue classes. Pennsylvania had classes on rescue and ambulance training and Texas also expanded its instruction in these subjects.

The use of radio in fire operations was also given attention in several school programs. Most notable of these was that conducted by the Maryland Fire School in which 315 individuals from 59 Maryland fire companies received instruction in the use of 2-way radio. The course was conducted in 4 evening sessions and enthusiastic response indicates that it was a worthy addition to the fire school program.

The Nebraska Fire School also devoted part of its program to instruction in the use of radio equipment.

Things to Come

Within the next year several developments will receive editorial attention in FIREMEN and other fire service publications. Each of these is important to the overall picture of firemen's training and they are itemized briefly below so that readers may follow their developments.

Pennsylvania, which already has an excellent fire school program, will soon have some new training facilities at Lewistown. The State Legislature last year appropriated $650,000 to create up-to-date fire

training facilities and tentative plans indicate that the Fire School will soon have one of the best equipped training sites in the country.

Dr. Harry C. Byrd, President of the University of Maryland, has announced that $250,000 has been allocated to improve the fine training facilities at the Maryland Fire School.

At the Fire School conducted at Texas A & M, a Rescue Street is being constructed on the 26-acre fire training site and when completed will afford excellent facilities for rescue training in addition to the fire fighting program.

The North Carolina Fire School in Charlotte is adding a pump basin and other training aids to its pump operators' school.

(Right) Fire fighters at the Annual New Haven Fire School using fog to extinguish an oil fire during the final demonstration of "Field Day." *(Photo by Warren C. Zapp)*

What Are Your Training Plans for Next Year?

The Editors of FIREMEN wish to thank the following representatives of the states and provinces who submitted data which served as the basis for this article. Readers planning to participate in fire schools and other firemen's training in the coming year may obtain pertinent information from the representatives listed below.

Alabama: Mr. M. O. Hulsey, Public Service Training, Box 1475, University of Alabama, University.

Arizona: Mr. Edwin C. Gracey, State Supervisor, Trade and Industrial Education, Phoenix.

Arkansas: State Supervisor J. C. Ruppert, Trades and Industrial Education, 18th and Spring St., Little Rock.

British Columbia: Mr. W. A. Walker, Fire Marshal, 411 Dunsmuir St., Vancouver.

California: Mr. Thomas S. Ward, Supervisor, Fire Training, State Department of Education, 1014 Ninth St., Sacramento 14.

Colorado: Captain E. W. Crawford, State Fire Instructor, c/o State Department for Vocational Education, 210 State Office Building, Denver 2.

Connecticut: Mr. Laurence W. Eddy, Supervisor, Service Training, State Department of Education, 490 Capitol St., Hartford.

Delaware: Mr. Frank M. Forstburg, Office of Trade and Industrial Education, 511 West Eighth St., Wilmington.

Florida: Mr. W. H. Barnett, Coordinator, Florida State Fire College, P.O. Box 785, Ocala.

Georgia: Mr. J. F. Cannon, Public Service Occupations Training, State Industrial Education Department, Atlanta.

Idaho: Chief Steve Taylor, Fire Department, Boise.

Illinois: Mr. George W. Harper, Director, Illinois Fire College, University of Illinois, Urbana.

Indiana: Mr. Francis Hartman, Chief of Firemen Training School, Purdue University, Lafayette.

Iowa: Mr. Mark H. Brosier, Supervisor, Firemanship Training, Iowa State Fire School, 110 Marston Hall, Ames.

Kansas: Mr. Gerald Pearson, Director, Extension Classes and Centers, University of Kansas, Lawrence.

Kentucky: Capt. V. A. Beam, Coordinator, Firemen's Training, 911 Thruston Ave., Louisville 4.

Louisiana: Chief R. A. Bogan, Fire Department, P.O. Box 96, Baton Rouge.

Maine: Mr. Maurice C. Varney, Director, Trade and Industrial Education, Department of Education, Augusta.

Maryland: Mr. Robert C. Byrus, Director, Fire Service Extension, University of Maryland, College Park.

Massachusetts: M. Norcross Stratton, Director, Public Service Occupations, Department of Education, Boston.

Michigan: Mr. M. D. Whale, Supervisor, Public Service Training, Department of Public Instruction, P. O. Box 928, Lansing.

Minnesota: Mr. Leonard C. Lund, Deputy Commissioner, Fire Marshal Division, 570 State Office Bldg., St. Paul 1.

Mississippi: Mr. E. A. Parker, District Coordinator, Trade and Industrial Education, P. O. Box 771, Jackson 106.

Missouri: Mr. Joseph I. Fetters, Administrative Assistant, Firemanship Training, 23 Jesse Hall, University of Missouri, Columbia.

Montana: Chief Clayton Brown, Polson Volunteer Fire Department, Polson.

Nebraska: Mr. Howard Gorham, State Supervisor, Trade and Industrial Education, State Capitol Bldg., Lincoln.

Nevada: Mr. F. I. Wallace, State Supervisor, Nevada State Board for Vocational Education, Carson City.

New Hampshire: Mr. Howard E. Swain, Supervisor, Trades and Industries, State House, Concord.

New Jersey: Mr. John P. Weeks, President, N. J. State Fire College, Room 806, 24 Branford Place, Newark 2.

New Mexico: Mr. Henry A. Gonzales, State Supervisor, Trade and Industrial Education, State Department of Education, Santa Fe.

New York: Mr. Thomas W. Ryan, Director of Safety, Executive Department, Division of Safety, 17 Elk St., Albany.

Roswell L. Pooler, Public Relations Coordinator, Bureau of Fire, Division of Safety, 17 Elk St., Albany 7.

North Carolina: Chief C. L. Burkett, Director-Conductor, N. C. Fire College and Pump School, Fire Department Headquarters, Salisbury.

North Dakota: Mr. G. W. Haverty, Assistant State Supervisor, Trade and Industrial Education State School of Science, Wahpeton.

Nova Scotia: Mr. S. S. Wright, Fire Marshal, 428–9 Roy Bldg., Halifax.

Ohio: Mr. Robert M. Reese, Supervisor, Trade and Industrial Education Service, Department of Education, 497 E. Town St., Columbus.

Oklahoma: Mr. George Orgain, Fire Service Instructor, Trade and Industrial Department, Oklahoma A. & M. College, Stillwater.

Ontario: Mr. D. E. Barrett, Office of Fire Marshal, 210 Huron St., Toronto.

Oregon: Elmer H. Halstead, State Supervisor, Public Service Training, Department of Vocational Education, Salem.

Pennsylvania: Mr. Edgar A. Spotz, Adviser, Fire Service Training, Public Service Institute, Department of Public Instruction, Harrisburg.

Saskatchewan: Mr. R. A. W. Switzer, Fire Commissioner, Regina.

South Carolina: Chief A. McMarsh, Fire Department, Columbia.

South Dakota: Mr. Robert Hanigan, Secretary, S. D. Firemen's Association, Pierre.

Tennessee: Mr. Homer S. Elkins, Itinerant Instructor, Fire Service Training, Trade and Industrial Education, 215 Chestnut St., Chattanooga.

Texas: Director H. R. Brayton, Firemen's Training School, Texas A. & M. College, College Station.

Utah: Chief J. K. Piercey, Fire Department, Salt Lake City.

Vermont: Chief Donald J. Kelley, Fire Department Headquarters, So. Winooski Ave., Burlington

Virginia: Mr. Harold I. Baumes, Executive Secretary and Director, League of Virginia Municipalities, Travelers Building, Richmond 16.

Washington: Mrs. Emma L. Ethier, Secretary, Washington State Firemen's Association, Room 223 N, North Bldg., Seattle 3.

West Virginia: Mr. R. E. Hanna, Fire Service Extension School, University of West Virginia, Morgantown.

Wisconsin: H. C. Thayer, Trade and Industrial Education, State Office Bldg., Madison.

Wyoming: Mr. Sam Hitchcock, Director State Board of Vocational Education, Cheyenne.

(Left) Moving in on a spill fire at the Salt Lake City Fire School.

(Right) Texas fire fighters using wet water and fog on an oil fire at the Texas Fire School.

Revolutionary New Fire Hose!

HOW would you like fire hose which weighs 20 percent less than hose now in popular use, made of a yarn that does not soak up water; hose which will roll into a small donut, will withstand being run over by a trailer truck without damage, and will carry a lot more water in "standard" sizes? These are just a few of the advantages claimed for a rubber-lined fire hose with filler of glass fibre yarn, now being manufactured by the Boston Woven Hose and Rubber Company of Cambridge, Mass. The hose is said to be even lighter than hose being made of other synthetic fibres.

Application has been made for patents for the new hose which was developed by T. M. Knowland, Assistant to the President, and R. S. Camelio, Development Engineer, both of Boston Woven Hose. Donald O. Johnston, Hose Development Manager, realized its practical application when he helped to fight a forest fire in Maine while on a vacation trip. This experience at the fire fighter's end of the fire hose business influenced Mr. Johnston to encourage development of the fabric hose to combine the advantages of flexibility, high burst strength, and rugged construction.

FOR experimental purposes, limited quantities of the fibre glass hose were made in both 1½-inch and 2½-inch sizes. Some of these were submitted to various tests and abuse to determine unforeseen weaknesses. Hose was subjected to burst pressure tests up to pressure of 900 lbs. per square inch. Sections were left in a canal for months before being retrieved and then subjected to tests which would normally be considered severe for new hose. Sections laid where large trailer trucks would have to run over them many times were studied for possible damage.

(Right) Donald O. Johnston, Hose Development Manager for Boston Woven Hose Company contrasts the compact donut formed by 50 ft. of rubber-lined fibre glass fire hose with donuts of similar length and nominal diameter made with other fibres.

Other sections were supplied to various fire departments both paid and volunteer for field experience. One of the departments cooperating in the test was that of Cambridge, Massachusetts, under Chief John F. Collins, which serves one of the most highly industrialized areas of the state.

Mr. W. F. Anderson, manager of the Boston Woven Hose Sales Department reports that while initial production is limited and that therefore only limited amounts can be supplied to any one customer, plans are under way for increased capacity to meet the need for lightweight, long-wearing hose. The company points out that the lighter construction made possible by the fibre glass yarn permits a larger interior diameter of a given nominal size of hose without increasing the external diameter or size of hose couplings. As pointed out in this month's "Making a Good Job of It" (page 10) even a ¼-inch increase in internal diameter of fire hose greatly increases the ability to carry water at a given pressure.

Christmas Suggestion

THE Viking Press, Inc., 18 East 48th Street, New York 17, N. Y., has announced publication of a 1954 Fire Engine Edition "Americana Calendar." This is a very attractive publication, showing twelve old fire engines in colorful detail done by Evelyn Curro of San Francisco, who has also prepared calendars of old locomotives and San Francisco cable cars. The calendars, which will make an excellent gift for any fire fighter, are $1.75 each.

Here a load of 22,250 lbs. strikes a charged line of fibre glass fire hose laid across the factory driveway to study its ability to absorb punishment. Subsequent X-ray examinations showed no damage to the new light-weight fire hose.

"Of course I take an interest in your department, Chief — Don't I always complain about the way it's run?"

This Silsby rotary gear steam fire engine "General Meade" obtainedin 1886is kept in operating condition by the Gettysbury department.

U. S. Vice President Nixon made commemorative address on the 1953 anniversary of the Battle of Gettysburg and the U. S. Air Force Drum and Bugle Corps gave a concert at the program sponsored by the fire department.

Dispatch board of the Adams County fire radio network is at Gettysburg's base station (KGA-325). Installed by the county with FCDA matching funds, 31 new mobile units supplemented 5 previous mobile units.

Gettysburg—

an old department with the "new look"

THE Gettysburg Fire Department in Pennsylvania is a closely knit company of 125 volunteer firemen headed by Chief Donald Jacobs and President William Weaver. The department operates seven pieces of apparatus purchased and owned by the department. The Borough Council provides the department with fire hose, clothing and minor equipment. Each member is fully outfitted with fire coat, boots, and helmet.

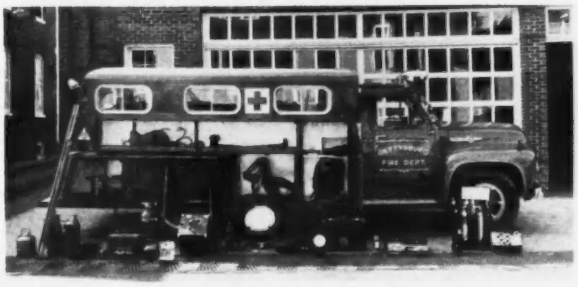
The department traces its history back to a hand operated bucket-fitted pumper purchased by the Borough and County in 1806 at a cost of $450. At that time an ordinance required that: "Every able-bodied male citizen of the town shall report at the scene of every fire with a leather bucket." Two years later the "Gettysburg Fire Brigade" was organized with 25 members. At the time that the town was occupied by forces of the Confederacy in July, 1863, the fire companies, which succeeded the fire brigade, had become disorganized. Fortunately, no fires occurred.

The main source of revenue for the department is a 5-day carnival held each year over the anniversary of the Battle of Gettysburg, July 13, 1863. The Sunday of carnival week is reserved for commemorative exercises. The carnival program includes a huge Fourth of July parade (American Independence Day). Each year, this is headed by a military band of national repute.

The annual income from the carnival approximates $8,000 which is used to operate and equip the fire department which has 4 triple combination pumpers, a 75-ft. aerial ladder, and auxiliary truck, and a new 1953 Sharpsville-built rescue truck on a Ford F800 chassis. The pumpers include a 1952 type 85 Mack with 750 gpm Hale pump and 500 gallon water tank, a 1942 GMC with 500 gpm pump, a 1941 Chevrolet with 350 gpm American-LaFrance booster pump and 460 gpm water tank, a 1936 GMC with American-LaFrance 500 gpm pump. The aerial ladder was obtained from Wilmington, Delaware, in 1947. A 1948 GMC tractor was installed and ladders and equipment were completely reconditioned.

The apparatus is all housed in a well equipped station maintained by the Borough Council and including meeting room, kitchen, workshop, and apparatus room. In addition, the building houses the office of the Burgess Police Department, and the Council Chambers.

Pride of the Gettysburg department is this radio equipped 1953 rescue truck built by Sharpsville Steel Fabricators, Inc., of Sharpsville, Pa., using FCDA matching funds for part fo the cost. The truck carries 1250 Watt light plant, 250 gpm portable pump, MSA inhalator, Chemox and other masks, iron lungs for children and adults, Mall saw, cutting torch, heavy duty jacks, linemen's emergency equipment, and other emergency first aid and fire fighting equipment.



Variations in Nozzle Tips and Pressures

MANY fire fighters have not had adequate opportunity to observe the differences in flow from various sizes of nozzle tips or the effects of changes in nozzle pressure. Much can be learned about hose streams by handling and observing the streams under different pressures. This is demonstrated by the following photographs taken by the NFPA Fire Services Department with the cooperation of the Norwood, Massachusetts, Fire Department.

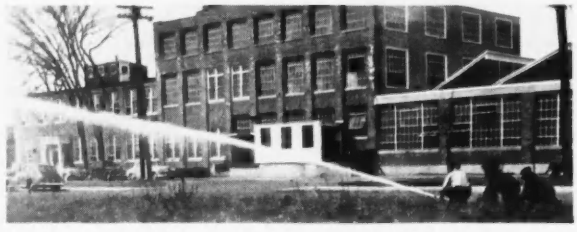
It is suggested that fire departments encourage their companies to practice with various sizes and calibres of standard hose streams in training exercises so that all members will be able to observe and become thoroughly familiar with the flow, reach, and pattern of streams from each nozzle assigned to the company.

In bringing the nozzle pressures exactly to the desired Pitot gage pressure readings for the purpose of taking these photographs it was found convenient to use an independent gate valve attached to a pumper discharge connection to permit a finer control than could be readily obtained with a standard pumper discharge gate. As fog nozzle pressures could not be measured with Pitot gage and piezometer rings were not at hand to permit gage readings behind the nozzle, the friction losses in the hose were computed from known flows from the fog nozzles (as published in the NFPA "Studies of Fire Department Fog Nozzles" and in the NFPA manual, "Operating Fire Department Pumpers") and were added to the desired nozzle pressures to determine pump pressure. For example, if a fog nozzle was known to discharge 50 gpm at 100 lbs., 10 lb. friction loss per 100 ft. of 1½-in. hose was added to give 110 lbs. pump pressure. This provided sufficient accuracy for observation and training purposes.

This is the typical ¼-in. solid stream from a booster hose nozzle at 50 lbs. discharging only 13 gpm. Some high-pressure fog jets on booster lines give twice this flow.

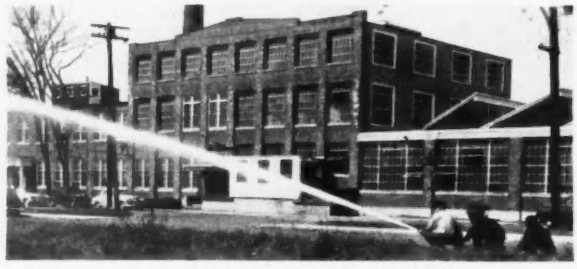
Here is the same ⅜-in. nozzle on 1½-in. hose discharging at 80 lbs. The 102 gpm is more water than some 2½-in. fog nozzles provide and two such streams give equivalent flow to one 1-in. tip at ordinary pressures. This stream is frequently experienced when a 1½-in. NAP type fog nozzle at about 100 lbs. is shifted to solid stream. The once popular ¾-in. tip (not shown) at 50 lbs. threw only slightly more water.

Here is the solid stream from a ½-in. nozzle tip at 50 lbs. discharging 51 gpm. This size stream is usually supplied by 1½-in. hose. The flow is about the same as that of certain 1½-in. fog nozzles at 100 lbs.



This stream from a 1-in. tip at 50 lbs. discharges 209 gpm. This is the solid stream most often used on long lines of 2½-in. hose because this flow does not cause excessive friction loss in the hose.

This is a 50-lb. solid stream from a ⅝-in. orifice as found with many combination fog-straight stream nozzles. This throws 80 gpm and thus provides a more adequate fire fighting stream for use with 1½-in. hose than that obtained with the ½-in. tip.



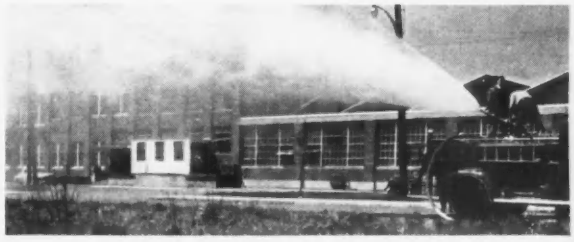
With 2½-in. hose lines of average length the 1⅛-in. tip is most frequently employed. As shown at 50 lbs. nozzle pressure the discharge is 265 gpm (250 gpm at 45 lbs.). Some fire departments use 1¼-in. tips (not shown) on very short hand lines but these are more difficult to handle and cause high-friction loss in conventional 2½-in. hose.

Here is a 1½-in. fixed pattern fog nozzle operating at 100 lbs. nozzle pressure and discharging approximately 48 gpm. This stream is fairly easy to handle but the flow and reach may not be adequate in some instances.

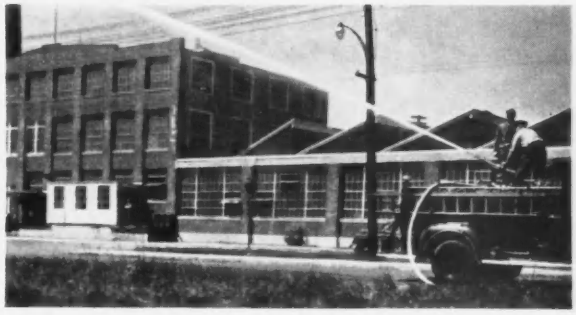
The pressure at the 1½-in. fog nozzle has been increased to 150 lbs. adding about 10 gpm discharge, making the line more difficult to handle. Some departments compromise with about 125 lbs. nozzle pressure.

Here is the way a jet from the same nozzle looks at 30 lbs. nozzle pressure as might be obtained from a private standpipe line. This may provide a useful first-aid stream of about half the flow and cooling capacity obtained from the same nozzle at normal pumper pressures.

For comparative purposes, a 2½-in. fog nozzle of the same type was also operated at 30 lbs. giving a flow of about 47 gpm at this low pressure. This is a very small flow from a 2½-in. line but is throwing about the same amount of water as the 1½-in. size at 100 lbs.



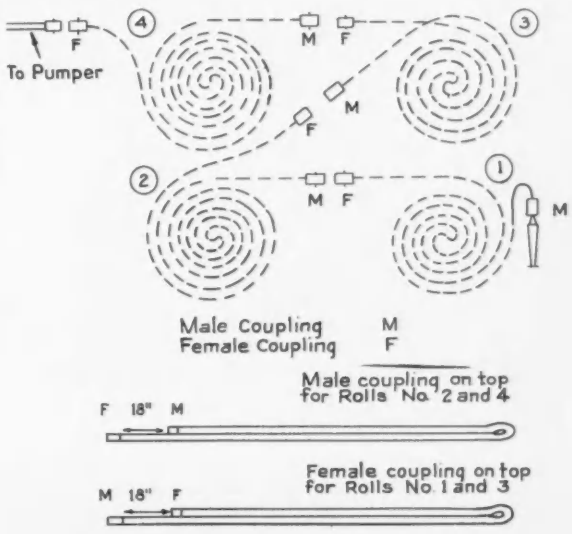
Here is a fog tip on a monitor nozzle discharging 500 gpm at close to 200 lbs. With large fires the cooling capacity and reach of heavy streams is needed whether solid stream or fog is used. Many 2½-in. fog nozzles provide relatively small flows. Note the water-curtain effect.



The 1½-in. tip on a monitor nozzle is frequently resorted to where hand lines are inadequate. At 80 lbs. this stream gives 600 gpm, and was supplied by two 2½-in. lines. Heavier streams could be similarly demonstrated with use of a larger capacity pumper.

Correction Notice on 1½-inch Leader Lines

THE October issue of FIREMEN on Page 19, in describing a 1½-in. hose load used by Denver Fire Department inadvertently included a diagram of a hose load developed by Sioux Falls, South Dakota Fire Department under Chief V. L. Crusinberry, which is arranged so that the hose is carried in compartments across the hose body back of the driver seat with hose pulled off in either direction as needed. We include in this issue the diagram from the Denver, Colorado, Training Manual, showing method of making Denver hose load for 1½-in. hose shown in the photograph in the first issue. Both of these methods carrying 1½-in. hose have definite advantages in ease and speed of handling. As illustrated by the diagram at left, for the Denver hose load one man takes the donut with playpipe attached and the other donuts lay themselves out in line free of kinks. A second man can advance additional donuts as desired.



"Punch and Trudy"

By Chief J. J. Benner, Torrance, California, Fire Department

ONE of the busiest extra-curricular activities of the average fire department is the role it must play in the dissemination of information to local organizations.

These groups are primarily schools and churches, and secondarily service clubs, women's organizations and fraternal groups. But the children in our parochial and public schools are the individuals whose minds are most susceptible to instruction in proper fire prevention practices.

Yet merely talking to children about fire prevention and the role that the fireman plays in the local community can be a boring thing indeed, both to the squirming children and to the department's representative who does the job every month.

The Torrance, California, Fire Department has recently completed a starring role in a motion picture which is intended to give to fire chiefs everywhere a needed instructional aid to supplement fire prevention talks to school pupils.

This film, "Punch and Trudy," is one of a series meant for television release, but is now made available to all cities and their respective fire departments.

The productions portray the activities of sixteen-year-old Punch and his six-year-old sister, Trudy. Punch is the normal likeable boy, having the neighborhood gang to play with, but always being pestered by his younger sister. In each of the stories, it is Trudy who comes to the rescue and gets Punch out of the difficulty in which he gets involved.

As members of the Torrance Fire Department we were invited by Riviera Productions of Redondo Beach, California, producers of the series, to "act ourselves" in this particular picture. When we found out the purpose of the film, we were more than happy to cooperate. We knew many demands would be made on our men and equipment, but we also knew of the value this film would have as a training aid.

The scenario of this production concerns an average size town which is being plagued by false alarms, apparently being turned in by one individual. The film deals with his eventual capture by the children.

THE picture opens with our equipment chasing down the city streets in response to a call, merely to arrive at the alarm box and find no fire. This occurs a second time in the film, and the narration explains how we are becoming concerned with this devious activity. Besides the police who have joined in the search, the town's citizens are also on the lookout for the culprit.

The next day the department must respond to another false alarm. During this scene we see a number of children gathered around the fire engines and the chief gives them a talk on the dangers of false alarms. He explains how his men's time, the equipment, and precious money are wasted whenever a false alarm occurs. The chief goes on to tell the children what would happen if a fire really occurred in another section of the city and his equipment was also needed there. Much property could be destroyed, with possible personal injuries, even death.

The film implies that the chief did not think that the children are responsible for this outbreak, but he does take this opportunity to give them an informal lecture on a problem which nearly every city faces at one time or another.

THE film is one that teaches cooperation between public officials and the children. Any fire department representative can walk into a school, give a fifteen minute talk on some phase of your department's activity, and then show the film. We sincerely believe that this entertaining type of production coupled with an underlying lesson, will do much to create a lasting impression on students. And the ages of the main actors in the story, six to sixteen, make the film more personal and understandable to pupils in classes from kindergarten to high school.

Incidentally, Riviera Productions conducted an extensive audience-testing program for the film, to see if it would be universally accepted. The picture was shown before school children of all ages, with the resulting reaction being exactly as anticipated. Then as a further experiment, it was projected before adult groups, to see if it had a mature appeal. Interest there was almost as great as it was before the youngsters, with the gist of the comments being, ". . . I want my children to see that."

The picture is in 16mm, runs for twelve minutes, and is complete with music, sound effects, and professional narration. We are proud to have been called on to contribute to this production, even though the producer had our department out "on location" for four days shooting and recording sound effects. It was enjoyable to us, and we hope that the film receives widespread distribution. (*Write to Riviera Productions, Redondo Beach, California, for information.* — ED.)

(*Left*) Battalion Chief Walker of the Torrance Fire Department talking to local children in a scene from "Punch and Trudy." (*Photo by Riviera Productions.*)

"Dacron" Fire Hose

THE E. I. duPont de Nemours & Co., of Wilmington, Delaware, exhibited a lightweight fire hose of 100 percent "Dacron" polyester fibre at the International Association of Fire Chiefs Conference in Toronto in September. Several other exhibitors also showed hose made with "Dacron." As described by duPont, advantages of fire hose made with "Dacron" include lighter weight, easier handling, longer wear, lower replacement cost, greater flexibility, and larger hose loads on trucks.

Evaluation of fire hose made with an outer jacket of 100 percent "Dacron" is being conducted on an experimental basis. However, where the synthetic fibre is desired, specifications could call for a "filling of Dacron," since hose made in this manner has been tested and listed by Underwriters' Laboratories, Inc.

At present, such hose consists of an outer jacket of cotton warp and "Dacron" filling and an inner jacket of the same construction. There is no vapor barrier between the two jackets and the outer jacket is porous. The synthetic fibre's strength is estimated as roughly three times that of the same weight of cotton. It is conceivable that a single jacket hose of 100 percent "Dacron" would be adequate because of its strength. (The outer jacket in conventional hose is provided to withstand abrasion.)

Most of the data on bursting strength has been obtained on hose of 2½-in. size. Some samples undergo an initial test pressure of 600 pounds. Three-foot lengths of the hose, which were subjected to bursting strength tests while dry, burst at 1240, 1160, and 1300 pounds per square inch. After wetting for 48 hours at room temperatures, one length burst at 1300 psi.

Temperature test comparing the synthetic fibre with conventional hose material indicated that the former had greater heat resistance. Another test consisted of exposing a tightly folded piece of "Dacron" hose to a temperature of 120 degrees for 60 days. It showed no unusual tendency to take a permanent set and showed no decrease in resistance to hydrostatic pressure, according to the maker of the synthetic fibre.

At the recent IAFC conference in Toronto, Ontario, the new "Dacron" hose was featured in this exhibit. The hose models of equal length above indicate that cotton hose weighs 56 pounds, cotton hose with "Dacron" filler weighs 51 pounds, while the hose made entirely of "Dacron" weighs 39 pounds.

It is further reported that "Dacron" resists mildew and has negligible water absorption characteristics. According to duPont, the following hose manufacturers are using this synthetic fibre in fire hose: Acme-Hamilton Manufacturing Co., American Rubber Manufacturing Co., Boston Woven Hose & Rubber Co., B. F. Goodrich Co., Goodyear Tire and Rubber Co., Hewitt-Robins, Inc., Pioneer Rubber Co., Quaker Rubber Co., Republic Rubber Co., and the United States Rubber Co.

Hose of 100 percent "Dacron" jacket is not yet commercially available but according to duPont, hose made with a cotton warp and a load-carrying filler yarn of "Dacron" is reported in use in many communities including: Houston, Texas; Jamestown, N. Y.; Auburn, N. Y.; Jersey City, N. J.; Niagara Falls, N. Y.; Regina, Sask.; St. Louis, Mo.; Toronto, Ont.; Wellesley, Mass.; Watertown, Mass.

Mass Fire Potential of Cities

THE U. S. Federal Civil Defense Administration is directing attention to the problem of mass fires and conflagrations in cities due to air attack in wartime. It has just issued under a July, 1953, date a technical manual entitled, "Civil Defense Urban Analysis." This manual, TM-8-1, is 96 pages, approximately 6 x 9 inches, and includes five sheets of diagrams. It may be obtained from civil defense offices and through the U. S. Government Printing Office, Washington, D. C., for 55 cents.

In addition to a section devoted to estimating the mass fire potential of cities, the manual contains a recommended method for estimating casualties and information on a number of other desirable studies to be made in each city. It suggests the preparation of a number of maps, those of most importance from the point of view of suggested fire studies being the following:

Land Use.
Building density (closeness)
Building construction (types).
Building heights.
Water distribution system and auxiliary sources.

Rotary Club Programs

ROTARY Clubs throughout the world received, in October, a suggestion to invite community fire marshals to December club meetings to discuss methods and reasons for improving fire safety, according to George R. Means, Secretary, Rotary International, 35 E. Wacker Drive, Chicago 1, Illinois.

This suggestion is contained in the December issue of "Program Ideas," a bulletin which is mailed to 8,000 Rotary Clubs in 88 countries. It is dated two months ahead to allow the service club members to consider and prepare adequate programs for their meetings. This particular issue recalls the Iroquois Theatre fire of December 30, 1900, in which 602 persons perished, and suggests the week of December 27 to January 2 as a good time to develop constructive programs for community fire safety.

Fire chiefs and fire marshals can take advantage of this early notice and prepare a hard-hitting fire prevention message for the club meetings. Some good topics for discussion and demonstration may be found in the new NFPA Christmas folder "Watch Out for Fire, Too, at Christmas," which explains hazards that are most likely to accrue during the holiday season. The illustrated pamphlet "Preventing Home Fires" also provides some step-by-step procedures for the home owner to follow in eliminating fire hazards. This publication contains extensive explanations of smoking, heating, and electrical wiring hazards which the home owner may eliminate by following simple procedures of practical fire safety. It may be obtained from the NFPA Executive Office for 25 cents per copy.

11th Annual Tri-State Meet at Quadick, Connecticut

APPROXIMATELY 35 volunteer fire companies from Massachusetts, Rhode Island, and Connecticut gathered at Quadick State Park near Thompson, Connecticut, on September 27, for the 11th Annual Tri-State Firemen's Meet. The meeting is held each year to enable various fire departments to exchange ideas, demonstrate apparatus, and test new techniques for fire fighting.

Willard Hall, of the Woonasquatucket Valley Firemen's League, again was master of ceremonies and was ably assisted by Irving "Sam" Black of the U. S. Rubber Company, Providence, Rhode Island. The Tri-State Meet is always held on the Sunday following the autumnal equinox because, as Willard Hall states, "It never rains on that day."

Again this year his contention proved correct as fair weather allowed every participating fire company to put on demonstrations for hundreds of visiting fire fighters, their families, and other persons interested.

One piece of equipment that caused a great amount of comment was the gas turbine portable pump of the Solar Aircraft Company of San Diego, California. (See FIREMEN for August, 1953.) Taking suction from Quadick Lake with a single length of 4-in. hose the pump supplied two 2½-in. lines into the 750 gpm pumper of Johnson Hose Company No. 3. Three 2½-in. lines were supplied from the pumper, two with 1-in. tips and one with a 1⅛-in. tip. Approximately 60 pounds nozzle pressure was obtained on each line providing three solid streams totalling nearly 750 gpm. Then two of the lines were shut down and one man handled a single line with a 1-in. Santa Rosa combination straight stream-fog nozzle, which in the "fog" position had a nozzle pressure exceeding 100 pounds.

Considerable interest was also shown in a display of the new spray sprinkler heads which were explained and demonstrated by Malcolm Nickerson, Assistant Director, Factory Mutual Laboratories, Norwood, Massachusetts.

A number of portable pumps were operated by various fire companies to measure the effectiveness of fire streams provided by such equipment. One of the most interesting of these evolutions was directed by Chief A. Morrison Ennis of the Mortlake Volunteer Fire Company, Brooklyn, Connecticut. A McCulloch portable pump supplied 200 ft. of 3-in. line to a 750 gpm pumper of the Willimantic Volunteer Fire Company. This in turn supplied two 2½-in. lines, one with a 1-in. tip and one with a ¾-in. tip. Initial operation showed that the two lines could not produce effective streams but with each line operating individually the 1-in. tip provided 198 gpm at 45 lbs. pressure while the ¾-in. tip was operated at 135 lbs. nozzle pressure and provided 193 gpm. Then a Homelite portable pump was operated in parallel with the McCulloch pump to supply the 750 gpm pumper. This in turn supplied a deck gun with a 1½-in. tip and 60 lbs. nozzle pressure provided a stream of 577 gpm.

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The Massachusetts State Department of Conservation also sent representatives to the meet with equipment for testing temperatures in hay to avoid spontaneous ignition. (See FIREMEN Magazine for August, 1953.) A number of forestry trucks with equipment for controlling forest fires were also demonstrated by Connecticut and Rhode Island representatives.

The Tri-State Meet ran continuously from eleven o'clock in the morning until four o'clock in the afternoon with each fire company moving onto the beach successively to show its apparatus. A great deal of attention was given to high pressure fog trucks and other equipment used by the volunteer departments in rural fire fighting. Again this year there was a demonstration by the Greenville Fire Department of Scott Air-Pak in underwater operations.

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Fire Prevention Week Contest

READERS of FIREMEN are reminded that the Fire Prevention Week Contest, sponsored by the NFPA Fire Prevention and Clean-Up Campaign Committee, closes November 30, 1953. Complete entries must be submitted to the NFPA Executive Office, 60 Batterymarch Street, Boston 10, Massachusetts, by that date. Mailing slips, entry blanks, and other information may be obtained from NFPA Public Relations Manager Robert W. Schuette at the same address.

Be on the Lookout for "Sparky"

During Fire Prevention Week, "Sparky", the firehouse dog, serving as the symbol of the Home Fire Prevention Campaign sponsored jointly by the NFPA and the Advertising Council, appeared daily on the "Rootie Kazootie" television show for children. The year-round Campaign has been intensified to include television and radio "spot" announcements, such as occur during station breaks. In addition, 11- x 14-in. cards for street car and subway advertising are being displayed in some 60,000 spaces donated by the Transportation Advertising Industry.

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British Fire Tests on Structural Elements, 1936-1946

THERE are only a few laboratories in the world equipped to test the fire resistance of structural elements of buildings such as wall, floor, and column assemblies. One of the well-equipped testing stations was established by the British insurance companies which erected a Fire Testing Station in 1935 at Elstree in Hertfordshire. This was operated by the Fire Offices' Committee until 1946 when it was turned over to the Joint Fire Research Organization which the Fire Offices' Committee formed with the British government Department of Scientific and Industrial Research.

At present, the Department of Scientific and Industrial Research embraces both the Joint Fire Research Organization and a Building Research Board, the latter operating a separate Building Research Station at Garston, Watford, Hertfordshire. Since 1950, the Building Research Station has issued a number of publications under the general designation, "Investigation on Building Fires." Part V of this series of publications is entitled, "Fire Tests on Structural Elements," by Dr. Norman Davey and L. A. Ashton. While issued by the Building Research Station, it covers work done at the Fire Research Station while that station was operated by the Fire Offices' Committee.

CURRENT British practice is to describe the fire resistance of structural assemblies in terms of fire resistance as follows: Grade A, 6 hours; Grade B, 4 hours; Grade C, 2 hours; Grade D, 1 hour; and Grade E, one-half hour. The publication, "Fire Tests on Structural Elements," tabulates assemblies which meet these fire resistance gradings. There is, for example, a table covering walls and partitions, another covering floors and roofs, and a third covering columns and beams. These provide a convenient summary of what the test work at Elstree had produced to 1946. However, this volume is a particularly valuable reference work because 233 of its 280 pages are devoted to details of the tests. The published data includes a drawing showing each assembly tested, a description of it in detail, temperature readings and

behavior of the assembly under test.

This volume and a number of related publications are part of a series of papers issued by Her Majesty's Stationery Office under the general heading of National Building Studies. The entire series of papers on the subject, "Investigations on Building Fires" (Parts I-V in four published parts), may be obtained from Her Majesty's Stationery Office, P. O. Box 569, London, S.E. 1, England, and from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. Postpaid prices are in parentheses below.

Part, I, "Estimation of Maximum Temperatures," and Part II, "Colour Changes in Concrete," Technical Paper No. 4, 1950, 28 pages, 9 pence (10½ pence, 25 cents).

Part III, "Radiation from Building Fires," Technical Paper No. 5, 1950, 32 pages, 1 shilling (1 shilling 1½ pence, 30 cents).

Part IV, "Fire Resistance of Timber Doors," Technical Paper No. 6, 1951, 28 pages, 1 shilling (1 shilling 1½ pence, 30 cents).

Part V, "Fire Tests on Structural Elements," Research Paper No. 12, 1953, 280 pages, board cover, 15 shillings (15 shillings, 5 pence, $3.50).

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British Film on A-Bomb Effects

THE British Home Office has recently issued a film for civil defense purposes entitled "The Atomic Bomb — its effects and how to meet them." The film is 16-millimeter, black and white with sound, on one 800-foot reel and four 400-foot reels. It is designed for general audiences and for this purpose it is very well put together. In addition to an introductory statement about A-bomb effects, there are sections on heat effects, radiation and blast effects, and effects on personnel. Copies may be rented or purchased in the U. S. from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y., and in Canada from the United Kingdom Information Office, 275 Albert St., Ottawa, Ont. Copies may be rented in the United Kingdom from the Central Film Library, Government Building, Bromyard Ave., Acton, London, W. 3, England, or purchased from the Home Office (Major Creswick Atkinson), Horseferry House, Dean Ryle St., London, S.W. 1.

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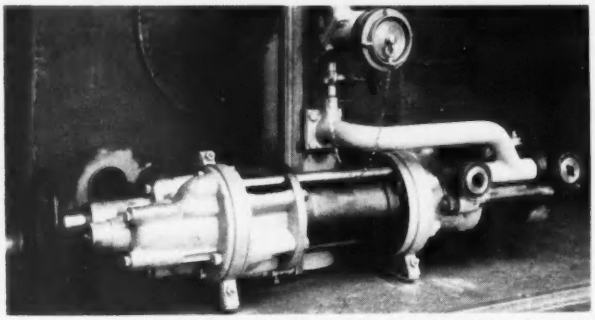
Nozzle Controlled High Pressure Pump Developed in The Netherlands

Based upon material published in the August, 1953, *Fire Protection Review*, London, England. Permission and photographs by courtesy of Geoffrey F. D. Pratt, Editor.

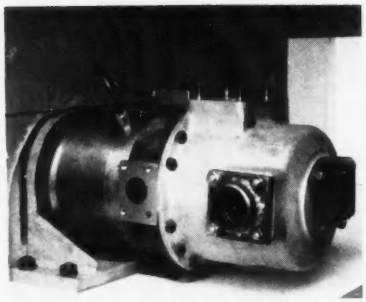
A HIGH pressure fire pump which can be controlled by nozzle men and requires no operator has been constructed for the Eindhoven Fire Brigade in The Netherlands, by Baghuis Machinefabriek, Best, near Eindhoven. The pump, powered by an oil generator driven by a power take-off, is automatic in operation once the power take-off is engaged. When nozzles are not in operation a relief valve allows the oil to by-pass and an automatic governor slows the engine. When a nozzle is opened the pressure drops, the relief valve closes, and the engine speeds up to provide a pre-set pressure. Nozzle controls permit either a straight stream or fog.



Close up of pump which delivers 60 gpm (U. S.) at 800 lbs. Vertical connection is injector for filling water tank from static sources.

The Baghuis high-pressure pump with hose reels and control gun-type nozzles mounted upon a fire appliance in The Netherlands.

An advantage is said to be that the pump and generator, which together weigh only 300 lbs., are so compact that they can fit on almost any apparatus. All precision machined parts work in oil while the heavier components of the water pump are of simple design and operate at slow speeds. Filters prevent generator oil from reaching the water line.



The hydraulic oil pump or generator driven by the vehicle engine at 1500 rpm by a power take-off which through oil pressure actuates a small piston in the cylinder of a double acting pump. This drives a companion piston on the water pump at 160 cycles per minute.

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for
FIRST AID
... for treating
BURNS *and* MINOR INJURIES

'Vaseline' Sterile Petrolatum Gauze Dressings are preferred by most medical authorities and used by the Armed Services, fire departments, rescue squads, disaster units, and for first aid in industry, schools, camps, athletics... as the safe, soothing, and simple wound covering of choice.

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No. 1 size—3" x 36" Strips
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Always Sterile... Always Ready

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Sterile Petrolatum Gauze Dressings

The tanker was in flames with 160,000 barrels of high hazard gasoline aboard!

It ignited when it collided with another tanker in the Delaware River. A ten-man Navy team, from damage control training center, Naval Base, Philadelphia, under the direction of Lieutenant Commander Louis O. Lindeman, came to the rescue in the tug U.S.S. Toka. Using Rockwood fire-fighting equipment, here is what they did:

NAVY FIRE FIGHTERS using a Rockwood FFF FogFOAM Nozzle direct FOAM into the deck and holds of the burning tanker. Note blanket of FOAM on aft deck.

APPROACHING TANKER, Navy Fire Fighters discharge FogFOAM Nozzles on deck of burning tanker extinguishing fire and cooling deck permitting men to board tanker to put out fire in hold.

MEN ON TUG cool tanker deck with Rockwood FOAM discharged from Rockwood 2½" FFF FogFOAM nozzle. Note FOAM on men, protecting them from intense heat.

THE FIRE IS OUT - and 92% of the cargo saved! During fire-fighting, FOAM was also pumped into tanks below deck. Entire operation took 6 hours. Tanker in distance was cause of fire.

GET MORE FACTS about Rockwood equipment by writing for the informative, 12-page booklet "Rockwood Fire Fighting Products." Rockwood Sprinkler Company, Portable Fire Protection Division, 88 Harlow St., Worcester 5, Mass.

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Engineers Water . . . to Cut Fire Losses

ROCKWOOD

Portable Fire Protection Division

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FIRES IN THE NEWS

(*Right*) **Wheeler, Indiana, September 16.** (*Wide World Photo.*) Spontaneous ignition in hay was held to be the cause of fire which destroyed this barn for a loss of $25,000. The 2-story wood frame structure contained nearly 100 tons of newly harvested hay and was well-involved before discovery. Fire companies responded from 6 surrounding communities on mutual aid assignments.

(*Left*) **Saginaw, Michigan, September 15.** Two warehouses and an office building were destroyed in this fire with an estimated loss of $500,000. Saginaw fire fighters responded to three alarms but delayed discovery and strong winds permitted the fire to spread beyond control of first responding apparatus.

for RUGGED DUTY!

MIDWESTERN
PROTECTIVE CLOTHING

The overwhelming preference for Midwestern Protective Clothing is the result of outstanding performance when the going is tough and the chips are down. The superior quality, design, fabric texture and many exclusive features found in Mackinaw Coats and other Midwestern garments help increase your department's efficiency and provide extra protection for your men at the scene of the blaze.

PROTECTION
COMFORT — SERVICE

You will find the type of fabric exactly suited to your needs in our wide selection of rubber materials. You can absolutely depend on the softness and flexibility of these high-grade materials to meet your most exacting requirements for lasting comfort, rugged service and greater efficiency on the job.

MIDWESTERN MFG. CO., Mackinaw, Illinois
Manufacturers of the Famous **MACKINAW Coats**

Providence, Rhode Island, September 22. (*Providence Journal-Bulletin Photo.*) Two teenage boys confessed to starting this fire which destroyed a 5-story warehouse and damaged four other buildings for an estimated loss of $300,000. Providence fire fighters responded with 32 pieces of apparatus and off-shift and reserve crews. A fire wall protected an adjacent warehouse used for the storage of paper, although heat was intense enough to actuate sprinklers within this building. Despite high winds, delayed discovery, and congested traffic conditions fire fighters managed to gain control of the fire within two hours.

Please mention FIREMEN when writing to Advertisers

Membership Report

AN EXCELLENT gift for any fire fighter during the coming Christmas season is the package of NFPA books shown on the back cover of this issue. For only $9.75 readers of FIREMEN and other NFPA members may obtain this "fireground library" of four equal-sized cloth bound editions covering a variety of fire fighting topics. The convenient order blank may be used, or simply write a note to the NFPA Executive Office, 60 Batterymarch Street, Boston 10, Massachusetts, and your order will be filled promptly.

Another exceptional gift for individual NFPA members or for NFPA member fire departments is a subscription to the Book and Pamphlet Service. To participate in this service any NFPA member may send a remittance of $15 to the NFPA Executive Office. Then as all new NFPA publications come from the press, including those for which there is a charge and those furnished without charge, they are automatically sent to the subscriber. Amounts for publications for which there is a charge are deducted from the subscriber's account until the $15 deposit is exhausted. The subscriber is then notified so that he may renew the service.

The Book and Pamphlet Service also assures subscribers of receiving promptly those publications which have pre-publication discounts.

NFPA Welcomes:

Alaska: Chugiak Volunteer Fire Company, Chugiak.

Colorado: Chief Theodore S. Daniels, Nucla-Nathrite Fire Protection District, Nucla.

Connecticut: Chief Howard G. Reynolds, Eagleville Fire Department, Incorporated, Eagleville.

Maryland: Chief Phillip O. Johnson, Potomac Heights Fire Department, Potomac Heights.

New York: Chief William C. Garvin, Yonkers Fire Department, Yonkers.

North Carolina: Chief A. E. Lundy, Pinecroft-Sedgefield Fire Protection District, Incorporated, Greensboro.

Nova Scotia: Chief J. Douglas Trefry, Yarmouth Fire Department, Yarmouth.

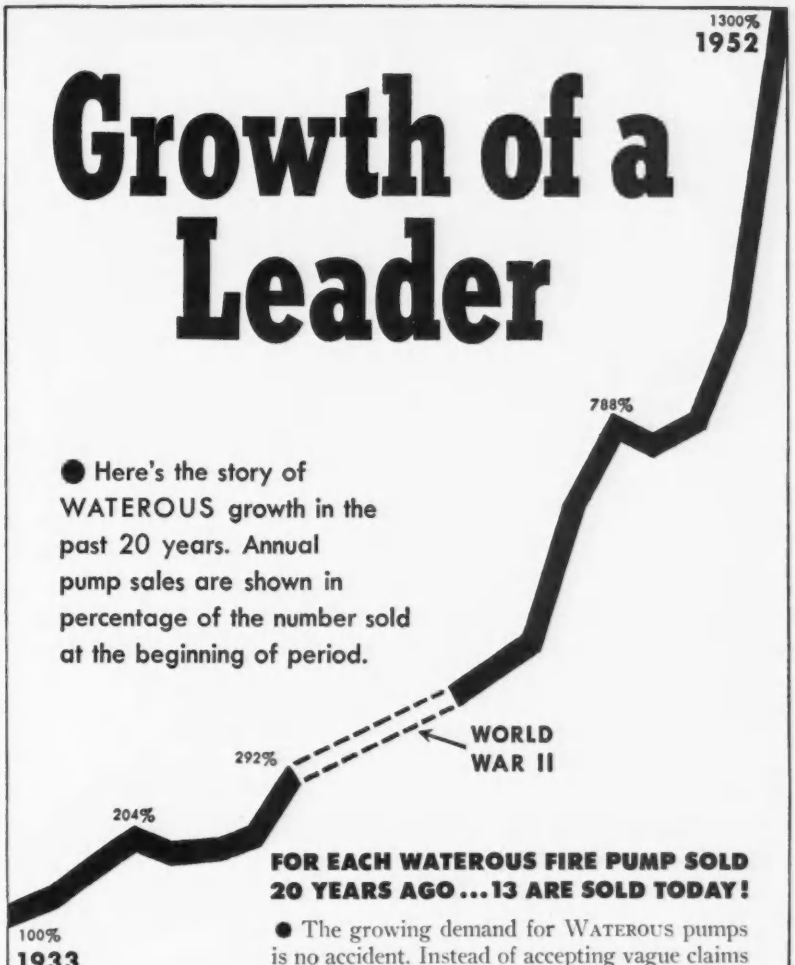
Oklahoma: Midwest City Fire Department, Midwest City.

Pennsylvania: West Side Hose Company, No. 3, Steeltown.

Texas: Wake Village Volunteer Fire Department, Wake Village.

Wisconsin: Chief M. Gielber, Plymouth Fire Department, Plymouth.

Growth of a Leader



● Here's the story of WATEROUS growth in the past 20 years. Annual pump sales are shown in percentage of the number sold at the beginning of period.

FOR EACH WATEROUS FIRE PUMP SOLD 20 YEARS AGO...13 ARE SOLD TODAY!

● The growing demand for WATEROUS pumps is no accident. Instead of accepting vague claims and trick performance, buyers today are making exacting comparisons, insisting on simplicity of operation, accessibility, durability of materials, and reliability of performance. More and more are insisting upon a thoroughly proven pump for their new fire engine.

For nearly 70 years, WATEROUS has been a leader in the fire fighting field. Today, WATEROUS pumps are standard equipment with leading apparatus manufacturers.

If you are in the market for new equipment, "Preferred Fire Pump Specifications" will help you obtain the proper pump for your needs. For a free copy, write WATEROUS COMPANY, St. Paul, Minnesota.

FROM 1886 . . . . TO 1953

Waterous

DEPENDABLE PUMPS

SINCE 1886

THE BOOTS THAT HELP FIGHT FIRES

—and stand up to this tough job *one third longer* than ordinary boots because they're made of an extremely tough rubber compound.

Designed for firemen exclusively with many special features: Thick-cleated, white, wrap-around outsole for maximum foot protection and visibility; built-in maplewood shank for comfort on ladders; stay-open reinforced collar.

CHECK OFF THESE MANY REASONS WHY U. S. FIREFIGHTER BOOTS GIVE YOU UNBEATABLE VALUE AND PROTECTION

- Thick-cleated outsoles for perfect grip.
- Built-in sturdy maplewood shank for ladder climbing.
- High skirt that doubles down but will not drag.
- Reinforced wide leg opening for fast, easy on and off.
- Wool felt lining with air-cushion insole.
- Smooth, snag-resistant 8 oz. duck construction.
- Firmly anchored, large pull-on loops.

U. S. Royal Firefighter Coats

100% waterproof coats take a drenching, yet keep a man dry. Sturdy black rubber with warm, napped maroon-colored linings. Roomy, 2-piece body—raglan shoulders for action; fly-front in instant snap-and-dee fasteners; large patch pockets. All seams are cemented, outside gum-strapped; entire coat is then vulcanized.

US ROYAL TEMPERED RUBBER

UNITED STATES RUBBER COMPANY

ROCKEFELLER CENTER • NEW YORK

Chief "Ed" Walsh Dies

CHIEF Edward Patrick Walsh, long-time NFPA member and recently retired from the San Francisco Fire Department, died on October 9 after a siege of illness. His passing followed by only four days the death of his brother, Lieut. William E. Walsh, of San Francisco's Engine Company 27.

Chief Walsh was succeeded on his retirement by Frank P. Kelly, former chief of the division of fire prevention and investigation. (See FIREMEN for September, 1953.)

Chief Walsh's career dated back to January 1, 1922, when he entered the department as a fireman. Five years later he was appointed lieutenant. He became captain in 1936; battalion chief in 1937; assistant chief in 1943; and in 1948 the Fire Commission chose him to succeed Chief Albert J. Sullivan.

He twice was successful in obtaining pay raises for the 1,697 men in his department and was instrumental in encouraging voter authorization of a $4,750,000 bond issue passed last year for the replacement of some of San Francisco's fire stations.

Phosphorous Grenades

INDIANAPOLIS, Indiana, fire fighters, headed by Chief Joseph Hancock (NFPA member) could only concentrate on cooling the remains of this tractor-trailer combination after its cargo of phosphorous grenades exploded on Highway 431 on September 17. Fire in the trailer was discovered by the driver who left the vehicle safely and telephoned an alarm. Two pumpers and two 500-gallon tankers responded on the 3-mile run in 15 minutes and fire fighters obtained good results by using two 2½-in. and four 1½-in. lines. (*Associated Press Wire photo.*)

"Sparky" Featured in Display

"Sparky," the firehouse dog, and "Smokey" the bear, each received a prominent position in this attractive fire prevention display exhibited at the recent conference of the International Association of Fire Chiefs in Toronto, Ontario. The display urged safe disposal of cigarettes and was sponsored by the Imperial Tobacco Company of Canada, Limited.

"All in a Day's Work"

One of the most disturbing of rescue efforts which fire fighters encounter is when a person threatens to extinguish his own life. James R. Hughes, 7th Division Marshal of the Chicago, Illinois, Fire Department accomplished such a rescue when difficult circumstances on September 23 when a woman threatened to leap from the 20th floor of the Chicago Tribune Tower. Efforts of police and other persons were unsuccessful and television cameras were ready to record the plunge. Marshal Hughes (white hair) provided the solution to the near-tragedy when he persuaded the woman to reach over to pat her pet dog. Then bracing himself on the narrow ledge and grasping her wrist as shown in the photo, he pulled her to safety. (*Wide World photo.*)

Do You Have Your Copy of

"The Teacher-Firemen Team"?

15 cents each

Write To:

National Fire Protection Association
60 Batterymarch Street, Boston 10, Mass.

"Another Life Saved! Our Record's Tops with Scott EQUIPMENT"

* Scott Air-Pak uses pure air (not oxygen) for fighting fires or rescuing victims.

* Scott Inhalators use oxygen or oxygen mixtures for reviving victims.

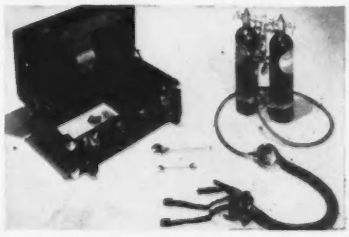
Scott DEMAND INHALATORS

"Emergency call from the watch desk — Rescue squad needed — man overcome. Minutes later he was feeling better, revived with our Scott Demand Inhalator. Makes you feel good to help folks like this.

"These efficient, portable oxygen units are wonderful for emergency service. Victims get 100% concentration — comfortably — thanks to the demand feature. We can also provide constant flow by pressing a button. The demand feature is fully automatic and cuts down training time."

SCOTT Air-Paks (illustrated on fireman at top left) enable rescue crews to reach victims under the most hazardous breathing conditions. Air-Paks assure the wearer constant supplies of cool, fresh AIR (not oxygen) for quick rescues with maximum safety. Do as hundreds of other fire departments have done . . . specify SCOTT.

TYPE A—for fixed installation in truck or ambulance.



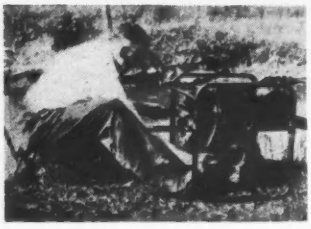
TYPE B—portable, including carrying case (with or without cylinders).

Ask your distributor for FREE DEMONSTRATION or write us today!

Scott — FOR SAFETY—FOR SERVICE

MEDICAL DIVISION
SCOTT AVIATION CORP.
236 ERIE ST., LANCASTER, N. Y.
CANADA: SAFETY SUPPLY CO., TORONTO — BRANCHES IN ALL PRINCIPAL CITIES
EXPORT: SOUTHERN OXYGEN CO., 157 Chambers Street, New York 7, N. Y.

Quick-Starting Portable . . . HALE FZZ



The FZZ will supply from draft 60 GPM at 90 lbs. and 100 GPM at 70 lbs.

Firefighters are pleased with the quick-starting ability of the Hale type FZZ Portable Pumping Unit — an especially valuable feature in freezing weather. The 4-cycle single cylinder 8¼ H.P. engine ensures ease and speed in starting . . . and plenty of power to the direct-connected Hale Pump. NOTE: Discharge adapter available for 2½-inch fire hose.

Many FZZ owners use a Hale 2½" adapter for pumping through a long single 2½" line to a fire distant from source of water. They then wye at the fire end into two 1½" lines providing two capable fire streams.

Write for FZZ Folder. Let us know if your Company wants a demonstration.

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PA.

FIRE PUMPS IN ALL STANDARD CAPACITIES

Your **BEST PROTECTION FOR FLAMMABLE LIQUID GAS & ELECTRICAL FIRES**

ANSUL FIRE EXTINGUISHING EQUIPMENT

HAND PORTABLE • WHEELED PORTABLE • STATIONARY UNITS • PIPED SYSTEMS • TRUCK MOUNTS • TRAILERS SELF-PROPELLED UNITS

MODEL 30-B

Ansul users get more from their investment in fire protection. In addition to superior fire extinguishing equipment, Ansul customers get valuable services. These services are available exclusively to users of Ansul Equipment.

Send for File No. 799. You will receive a variety of helpful printed matter. Included is our latest catalog and a description of the free services available to Ansul customers.

ANSUL *Chemical Company*

FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN

MANUFACTURERS OF FIRE EXTINGUISHING EQUIPMENT, INDUSTRIAL AND FINE ORGANIC CHEMICALS, LIQUEFIED GASES AND REFRIGERATION PRODUCTS

British Fire Research — 1952

THE annual report of the British Joint Fire Research Organization for 1952 not only summarizes developments during the year but provides a recapitulation of the work of the organization for the 6-year period 1947 to 1952, inclusive. The British Joint Fire Research Organization is a project of the British insurance companies through the Fire Offices' Committee and of the British government through the Department of Scientific and Industrial Research. It took over the Elstree Testing Station of the Fire Offices' Committee in 1947 and currently includes a technical staff of 44 persons. Its research is backed up by an arrangement with the Home Office through which essential details of all fires occurring in the United Kingdom are reported by the public fire departments.

The current report covers work being done on some of the new vaporizing liquid extinguishers, on ignition by heat radiation and a large number of other subjects on which work is proceeding. A small furnace for measuring surface flame spread is described, and the report contains an excellent series of pictures showing how fire tests have been conducted with small scale models.

"Fire Research 1952" is the title of the 72-page pamphlet available from Her Majesty's Stationery Office for three shillings. Members in the United States may order copies for 75 cents each through the British Information Services, 30 Rockefeller Plaza, New York 20, N. Y.

FOR SALE

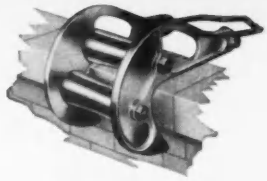
2—500 gallon Pumpers with 500 gallon tanks

No. 1. 1938 Diamond T
No. 2. 1948 International (Model KB5)

For further information on prices and details, contact

Thomas W. Markley, Secretary
East End Volunteer Fire Co., Inc.
East Farmingdale, N. Y.

PRODUCTS ENGINEERED AND DESIGNED TO FIGHT FIRES!

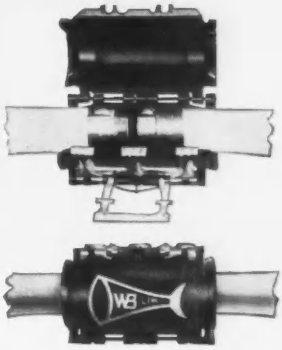


HOSE ROLLER

Constructed of Wooster-lite alloy with bronze bushing and cold rolled steel pins and rope hook. This roller weighs less than 10 lbs. It is 13" long and 8" wide and high. Most departments are now specifying this hose roller on all their pumper specifications as well as ladder trucks.

TRUMPET HOSE CLAMP

Extremely light, self-locking, quickly attached, easy to shut down charged line without extra pressure surge. Opening is steady and controlled.



TRUMPET HOSE JACKET

The Wooster-lite alloy used in this jacket will not crack or break in service. The liner of tough, live synthetic rubber is so constructed that under pressure all joining edges are sealed tight. Spring latch snap locks shut positively with one easy motion. Available in 1½" and 2½" sizes.

UNIVERSAL TRUMPET SPANNER

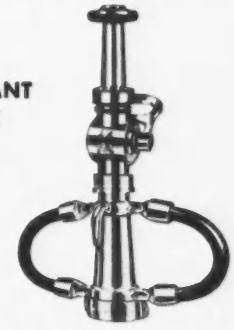
In addition to having the tapered head which fits all types of lugs on couplings from ¾" thru 4", this wrench has a very efficient "jimmy" and gas cock shut-off key.

UNIVERSAL HYDRANT WRENCH AND SPANNER

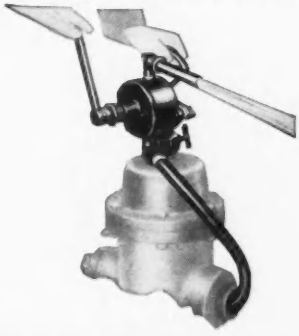
This wrench head is designed to take all types of pentagon, octagon or square hydrant nuts, since the screw handle is adjustable to compensate for size. The spanner hook takes all couplings from ¾" through 4".

LITTLE GIANT PLAY PIPE

(PGL-BN-T5R)



With cushion ball shut-off and 6" std. threaded tip and rubber bumper.



OSCILLATING HYDRANT PUMP

An ideal, inexpensive hydrant pump which can be relied upon to always work regardless of weather conditions. The base of the pump is adapted to fit and lock on any pentagon or square hydrant. The stainless steel shaft resists scoring, pitting, and corrosion.

GEYSER TURRET NOZZLES

Operate safely at lower elevation ranges than other portable units. Fully adjustable elevating range. Can be turned in complete circle horizontally.

Rotatable mounting fixture intended for carrying nozzle on top of apparatus for use as rigid deck pipe. May be quickly dismounted for portable surface use. Base Plate 20" x 20", conventional post height 4".

WOOSTER BRASS

WOOSTER, OHIO

A DIVISION OF THE FYR FYTER COMPANY

DANGER waits where least expected -

FEDERAL
Beacon-Ray
warns
from every angle!

Every crossroads is a crisis when you misplace your faith in *one-angle* warning lights! Equip your apparatus with the *one* emergency light that commands caution from *every angle* . . . the FEDERAL BEACON-RAY LIGHT.
Two Powerful sealed-beam lamps, mounted back-to-back, rapidly rotate for complete 360° protection on the way, or standing still at the scene of a fire. As more and more fire departments specify BEACON-RAY, this sweeping flash of intense light is becoming THE symbol of fire fighters on the way . . . automatic clearance of right-of-way from *all angles!*

Specify the Finest - **Federal Beacon-Ray Lights - Federal Coaster Sirens**

Write today for Emergency Signals Bulletin

FEDERAL ENTERPRISES, INC.
Formerly: FEDERAL ELECTRIC COMPANY, INC.
8717 SOUTH STATE STREET CHICAGO 19, ILLINOIS

SENSIBLE
FOR ALL YOUR HOSE CONNECTIONS

Double Female Connection

Plate 115

Always Specify
By Name "Sensible"

In our line of fire fighting equipment is this double female connection which, among other points of superiority, includes the "Sensible Lug" feature. We also manufacture a double male connection with "Sensible Lugs." The curved surfaces of this modern connection enable the hose to glide easily over all obstructions, thus preventing snagging, an important safety and economy detail appreciated by those who know.

POWHATAN BRASS and IRON WORKS
RANSON, WEST VIRGINIA
Phones 93 & 94 Charles Town, West Virginia
Established 1892

Fire Chiefs' Disaster Institute

A THREE-DAY program covering problems of fire disaster will be held December 1–3 for chief fire officers of Connecticut and other New England States. It will be conducted at the University of Connecticut, in Storrs, by the State Department of Education, in cooperation with the State Civil Defense Office and the Connecticut Fire Chiefs' Association.

Enrollment will be limited to thirty chief officers from Connecticut and about twenty from other states. The first day will be devoted to technical presentations by authorities in Civil Defense and Fire Protection. The second day will feature a fire study of a selected city and a map exercise with an assumed atomic bomb burst creating the problem. Data and reports will be presented at progressive intervals. An actual test of the state civil defense plan for fire communications will be included in this phase.

Further information may be obtained from L. W. Eddy, Supervisor, Service Training, State Department of Education, 490 Capitol Street, Hartford, Connecticut.

Fire Report

BRIEF, but pretty inclusive is the following fire report submitted to FIREMEN by Chief R. Locke of Oregon City, Oregon.

Oregon City Fire Department
September 29, 1953 — 11:25 A.M.

Two car fires reported within two minutes.
Both cars within two blocks of fire station.
Both fires reported to firemen at fire station.
Both fires were in wiring under the dash board.
Both had the same loss.
Both extinguished by hand fire extinguishers.
Both car batteries were disconnected.
Both cars were driven by automobile salesmen from two different firms.
Both salesmen called their respective garages for service.

JOHN BEAN

adds a new dimension to firefighting

the new combined true high-pressure fog and volume fire-fighter

Fast-striking high-pressure fog backed up by slugging volume power now makes it possible for you to fight fires as never before. Bean engineers add this greater dimension to firefighting techniques with their new combination high-pressure fog and volume fire-fighter. It boasts the biggest firefighting wallop ever packed into one unit. Two famous Bean pumps (operating simultaneously or separately) offer you the chance to attack the fire with 2 high-pressure and 4 volume lines. A 500-gallon tank allows you to start pumping seconds after you arrive at the scene. You can get in fast and keep slugging for a "quick kill."

Besides this new approach to firefighting methods, Bean engineers have fashioned a streamlined, sleek-looking truck with a low center of gravity for safe riding at high speeds. 5 full-size compartments furnish more than 45 cubic feet of storage space for supplementary equipment. A rear fill hopper with an easily removable strainer makes filling a simple operation. For fighting grass, prairie, or other running fires, both high-pressure lines can be used while the truck is in motion.

OUR BEST SALES TALKS COME FROM THE CHIEFS WHO USE BEAN FIRE-FIGHTERS

Write these men for their opinion of the unit.

Fire Chief Eugene Davidson—Bedford, Penn.

Fire Chief R. L. Henry—Annandale, Virginia

JOHN fmc BEAN

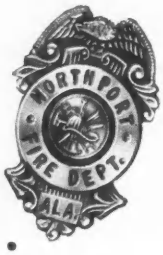
TWO-FISTED FIRE-FIGHTERS

Can be mounted on most standard truck chassis

John Bean Division
Dept. 127
Lansing 4, Michigan

John Bean Division
P.O. Box 145
San Jose, California

A PRODUCT OF FOOD MACHINERY AND CHEMICAL CORPORATION



SMALL . . .

but with full authority

A miniature badge is small in size but we all know it carries full authority for you. You're proud of it, that's why you should be sure your *miniature* is a truly fine badge reflecting honor and prestige for you and your department.

Ask your equipment supplier to show you the finest . . . BLACKINTON BADGES the next time he calls.

All of our miniature badges are made with solid backs, suitable for engraving.

DEALERS:—*Why should you promote and sell Blackinton Badges?*

Because — (1) Blackinton sells only through authorized dealers in the United States and Canada — we protect and encourage your sales effort — we do not contact departments direct.

(2) *Lower* selling price with *higher* dealer discounts to you.

(3) Constant improvement in *design, finish* and *development.*

BLACKINTON

V. H. BLACKINTON & CO., INC., ATTLEBORO FALLS, MASS.

Close of a Career

JOHN J. McCARTHY, a member of NFPA and one of New York City's renowned fire officers, died of a heart attack on September 25, after 32 years of outstanding service. He had been Assistant Chief of the Fire Department from 1941 until his retirement in 1945, and after that he became fire protection consultant to the New York State Hotel Association, a position he held until his death.

During his career he fought fires in every area of the city. In every civil service competition he was at or near the top of the list and in 1929 he became Battalion Chief at the age of 38, youngest in rank at the time.

He was responsible for many reforms in procedure during his years of service. In 1924 he won the Department's Administration medal for his method of more quickly dispatching fire companies on telephone alarms, and again in 1939 for his work in organizing the auxiliary fire force. In 1926 he prevailed upon Chief Kenlon to modernize the uniforms of fire fighters from a design that had been in use since 1865. In the same year he revamped the Department's book of rules and regulations. Ten years later he introduced the "McCarthy disc", a portable device for identifying at a glance any hydrant out of order.

In 1941 he was placed in charge of defense activities of the Department, supervising its wartime fire protection activities, including the recruiting of 56,000 auxiliary firemen.

He founded the Department's well-known quarterly magazine, "WNYF," and became managing editor. He was author of "The Science of Fighting Fire" and also a technical manual for firemen and auxiliaries. In 1949 Governor Dewey appointed him to the Fire Advisory Board of the State Division of Safety. In addition, Chief McCarthy served on the city Board of Standards and Appeals.

He was an NFPA member since 1946, a member of the International Association of Fire Chiefs, and of the Advisory Council of the State Joint Legislative Committee on Multiple Dwellings and Housing.

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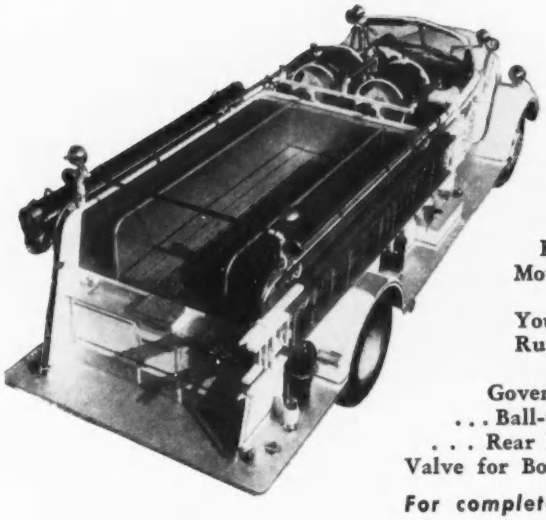

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What's New in Fire Equipment?

Chlorobromomethane Extinguisher

For protection against incipient Class B and C fires the American-LaFrance-Foamite Corporation of Elmira, New York, has developed a 1-quart trigger-operated chlorobromomethane extinguisher known as Alfco Model PCB-1. The lightweight stored pressure unit is designed for one-hand operation, according to the manufacturer, who states that the unit will operate at high or low temperatures, will not freeze in temperatures down to minus 65 degrees Fahrenheit and will discharge 95 percent of its contents in any position from vertical to within 15 degrees of horizontal. Write to the manufacturer at the above address for illustrated literature and other information.

Flame Red Safety Can

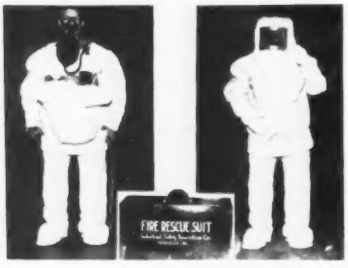
Justrite Manufacturing Company, 2061 North Southport Ave., Chicago, Illinois, has announced that its safety cans in all sizes will be distinguished by a new color, flame red. The color will permit instant identification, high visibility and sharp contrast to other fire equipment, according to the manufacturer. The safety cans have been listed by Underwriter's Laboratory, Inc., and have been approved by the Associated Factory Mutual Fire Insurance Companies. The cans are available in sizes from one pint to five gallons. Write to the manufacturer for further information.

Bulletin on Electric Generators

Free copies of a 4-page, 2-color catalog-in-brief describing carryable generators are being distributed by Homelite Corporation, 865 Riverdale Avenue, Port Chester, New York. The bulletin describes the company's compact, lightweight, gasoline-engine-driven generators for industry, homes, farms, hospitals and institutions. The booklet also includes a section on specifications, electric output, and prices of five generator models. Ask for Bulletin L-411 when writing to the manufacturer at the above address.

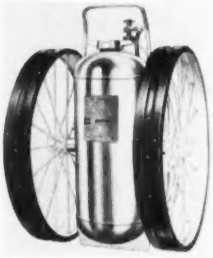
Fire Rescue Suit

A new fire rescue suit for use in fighting pit fires, spill fires, and fires in aircraft, has been developed by the Industrial Safety Specialty Company, Inc., 8th and Chestnut Sts., Perkasie, Pennsylvania. Consisting of trousers, hooded blouse, gloves, and rescue blanket, the suit is constructed of an outer layer of 90% asbestos cloth, plus 1 inch of fibre glass insulation, covered with the aluminum foil, plus an inner lining of vinyl-treated glass cloth. The complete unit (not including blanket) weighs 28 lbs. It comes in a carrying case measuring 12 x 15 x 19 inches. The rescue blanket weighs 6 lbs. Self-generating breathing apparatus designed specifically for use with this suit is also available. Write to the manufacturer for further information.



Brochure on Decalcomanias

Decals for volunteer and paid fire departments are described in a new brochure issued by the United States Decal Company, P.O. Box 193, Williamsville, New York. The decals can be placed on windows or car windshields and in other places to provide identification. Among the products described is a decal for warning traffic which follows fire apparatus. Three other types describe fire extinguishers, a special set is for fund raising campaigns, while other types are for fire chiefs' cars and decorative scroll work. Write to the manufacturer at the above address for further information.



New Ansul Extinguishers

Ansul Chemical Company of Marinette, Wisconsin, reports new nozzle and gas tube design and stepped-up rate of flow in their latest models of fire extinguishers. Models 150-B, and 350-B replace the company's A-models. Dry chemical is used as the extinguishing agent in the wheeled fire extinguishers which are designed for industrial fire protection. Patents are pending on several features of the new nozzle which incorporates a special sealing method to insure water and gas-tightness. Through redesigning, range of the dry chemical stream has been increased to 40 ft. Operating pressure on the 350-B extinguisher can be obtained in 12 seconds, according to the manufacturer. Overall dimensions for the 150-B are 55¾ inches high and 30 inches wide. Weight is 525 lbs. The 350-B is 60 inches high, 35 inches wide, and weighs 1080 lbs.

Pamphlets on Radio Products

New literature describing UHF mobile radios and desk stations is available upon request to Engineering Products Department, RCA Victor Division, Camden 2, New Jersey. The 2-color, 4-page pamphlets are numbered C13 and C15 and include illustrations and descriptions of the company's new radio products. C13 describes the UHF 2-way mobile radio Type CMU which operates on 6 or 12 volts and permits 4-frequency operation within the range of 450 to 470 megacycles. C15 describes the UHF desk station CSU-20A which operates on the same frequencies on 16–18 watts. The set may be obtained in a variety of transmitting and receiving frequency combinations. Write to the manufacturer at the above address for further information.

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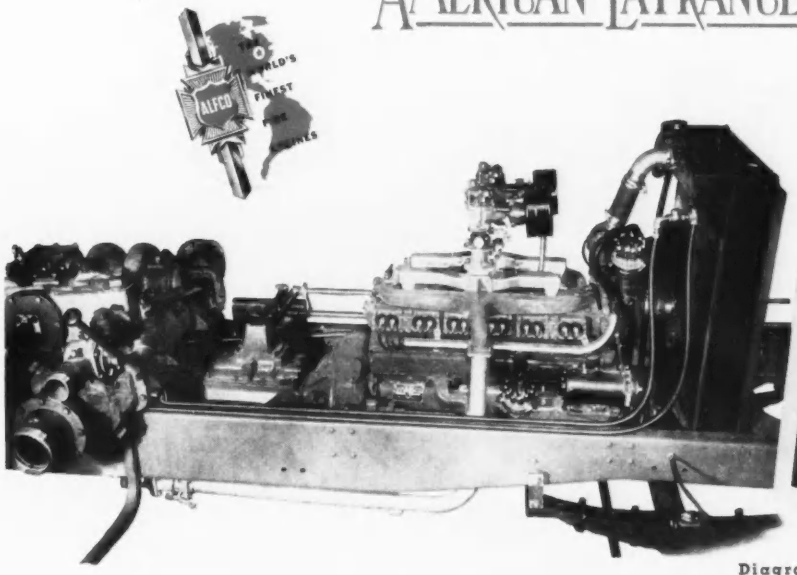

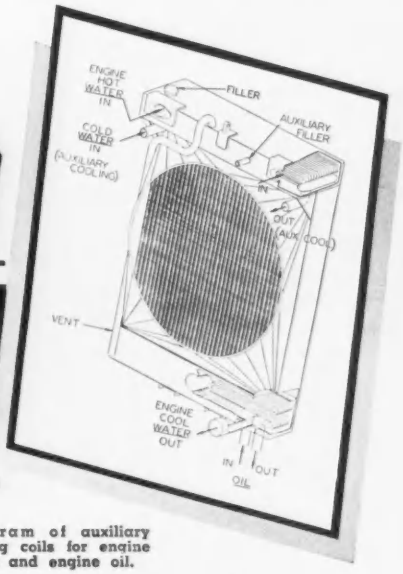

Diagram of auxiliary cooling coils for engine water and engine oil.

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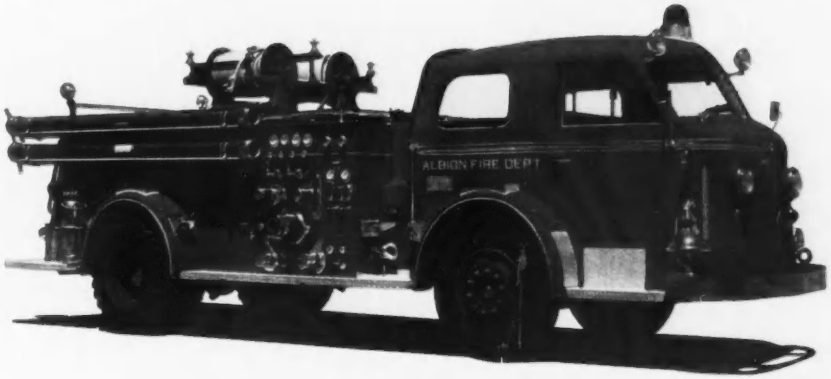

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